SMITHSONIAN

CONTRIBUTIONS TO KNOWLEDGE.

VOL. XX.

EVERY MAN IS A VALUABLE MEMBER OF SOCIETY, WHO, BY HIS OBSERVATIONS, RESEARCHES, AND EXPERIMENTS, PROCURES KNOWLEDGE FOR MEN.—SMITHSON.

CITY OF WASHINGTON:

PUBLISHED BY THE SMITHSONIAN INSTITUTION.

MDCCCLXXVI.

PHILADELPHIA:
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ADVERTISEMENT.

This volume forms the twentieth of a series, composed of original memoirs on different branches of knowledge, published at the expense, and under the direction, of the Smithsonian Institution. The publication of this series forms part of a general plan adopted for carrying into effect the benevolent intentions of James Smithson, Esq., of England. This gentleman left his property in trust to the United States of America, to found, at Washington, an institution which should bear his own name, and have for its objects the "*increase* and *diffusion* of knowledge among men." This trust was accepted by the Government of the United States, and an Act of Congress was passed August 10, 1846, constituting the President and the other principal executive officers of the general government, the Chief Justice of the Supreme Court, the Mayor of Washington,[1] and such other persons as they might elect honorary members, an establishment under the name of the "Smithsonian Institution for the increase and diffusion of knowledge among men." The members and honorary members of this establishment are to hold stated and special meetings for the supervision of the affairs of the Institution, and for the advice and instruction of a Board of Regents, to whom the financial and other affairs are intrusted.

The Board of Regents consists of two members *ex officio* of the establishment, namely, the Vice-President of the United States and the Chief Justice of the Supreme Court, together with twelve other members, three of whom are appointed by the Senate from its own body, three by the House of Representatives from its members, and six persons appointed by a joint resolution of both houses. To this Board is given the power of electing a Secretary and other officers, for conducting the active operations of the Institution.

To carry into effect the purposes of the testator, the plan of organization should evidently embrace two objects: one, the increase of knowledge by the addition of new truths to the existing stock; the other, the diffusion of knowledge, thus increased, among men. No restriction is made in favor of any kind of knowledge; and, hence, each branch is entitled to, and should receive, a share of attention.

[1] This office has been abolished.

The Act of Congress, establishing the Institution, directs, as a part of the plan of organization, the formation of a Library, a Museum, and a Gallery of Art, together with provisions for physical research and popular lectures, while it leaves to the Regents the power of adopting such other parts of an organization as they may deem best suited to promote the objects of the bequest.

After much deliberation, the Regents resolved to divide the annual income into two parts—one part to be devoted to the increase and diffusion of knowledge by means of original research and publications—the other part of the income to be applied in accordance with the requirements of the Act of Congress, to the gradual formation of a Library, a Museum, and a Gallery of Art.

The following are the details of the parts of the general plan of organization provisionally adopted at the meeting of the Regents, Dec. 8, 1847.

DETAILS OF THE FIRST PART OF THE PLAN.

I. To increase Knowledge.—*It is proposed to stimulate research, by offering rewards for original memoirs on all subjects of investigation.*

1. The memoirs thus obtained, to be published in a series of volumes, in a quarto form, and entitled "Smithsonian Contributions to Knowledge."

2. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge, resting on original research; and all unverified speculations to be rejected.

3. Each memoir presented to the Institution, to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains; and to be accepted for publication only in case the report of this commission is favorable.

4. The commission to be chosen by the officers of the Institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.

5. The volumes of the memoirs to be exchanged for the Transactions of literary and scientific societies, and copies to be given to all the colleges, and principal libraries, in this country. One part of the remaining copies may be offered for sale; and the other carefully preserved, to form complete sets of the work, to supply the demand from new institutions.

6. An abstract, or popular account, of the contents of these memoirs to be given to the public, through the annual report of the Regents to Congress.

II. To increase Knowledge.—*It is also proposed to appropriate a portion of the income, annually, to special objects of research, under the direction of suitable persons.*

1. The objects, and the amount appropriated, to be recommended by counsellors of the Institution.

2. Appropriations in different years to different objects; so that, in course of time, each branch of knowledge may receive a share.

3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the Smithsonian Contributions to Knowledge.

4. Examples of objects for which appropriations may be made:—

(1.) System of extended meteorological observations for solving the problem of American storms.

(2.) Explorations in descriptive natural history, and geological, mathematical, and topographical surveys, to collect material for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of Government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations, and accurate surveys, of the mounds and other remains of the ancient people of our country.

I. To diffuse Knowledge.—*It is proposed to publish a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.*

1. Some of these reports may be published annually, others at longer intervals, as the income of the Institution or the changes in the branches of knowledge may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report; to be paid a certain sum for his labors, and to be named on the title-page of the report.

4. The reports to be published in separate parts, so that persons interested in a particular branch, can procure the parts relating to it, without purchasing the whole.

5. These reports may be presented to Congress, for partial distribution, the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports:—

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.
2. Natural history, including botany, zoology, geology, &c
3. Agriculture.
4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.
6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world; penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. To diffuse Knowledge.—*It is proposed to publish occasionally separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs translated from foreign languages, or of articles prepared under the direction of the Institution, or procured by offering premiums for the best exposition of a given subject.

2. The treatises to be submitted to a commission of competent judges, previous to their publication.

DETAILS OF THE SECOND PART OF THE PLAN OF ORGANIZATION.

This part contemplates the formation of a Library, a Museum, and a Gallery of Art.

1. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies of the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.

2. The Institution should make special collections, particularly of objects to verify its own publications. Also a collection of instruments of research in all branches of experimental science.

3. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found elsewhere in the United States.

4. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected, for rendering the Institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

5. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the Institution can make provision for their reception; and, therefore, it will seldom be necessary to purchase any article of this kind.

6. Attempts should be made to procure for the gallery of art, casts of the most celebrated articles of ancient and modern sculpture.

7. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art-Union, and other similar societies.

8. A small appropriation should annually be made for models of antiquity, such as those of the remains of ancient temples, &c.

9. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; distinguished individuals should also be invited to give lectures on subjects of general interest.

In accordance with the rules adopted in the programme of organization, each memoir in this volume has been favorably reported on by a Commission appointed

for its examination. It is however impossible, in most cases, to verify the statements of an author; and, therefore, neither the Commission nor the Institution can be responsible for more than the general character of a memoir.

The following rules have been adopted for the distribution of the quarto volumes of the Smithsonian Contributions:—

1. They are to be presented to all learned societies which publish Transactions, and give copies of these, in exchange, to the Institution.

2. Also, to all foreign libraries of the first class, provided they give in exchange their catalogues or other publications, or an equivalent from their duplicate volumes.

3. To all the colleges in actual operation in this country, provided they furnish, in return, meteorological observations, catalogues of their libraries and of their students, and all other publications issued by them relative to their organization and history.

4. To all States and Territories, provided there be given, in return, copies of all documents published under their authority.

5. To all incorporated public libraries in this country, not included in any of the foregoing classes, now containing more than 10,000 volumes; and to smaller libraries, where a whole State or large district would be otherwise unsupplied.

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SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.

268

THE

WINDS OF THE GLOBE:

OR THE

LAWS OF ATMOSPHERIC CIRCULATION OVER THE SURFACE OF THE EARTH.

BY

JAMES HENRY COFFIN, LL.D.,

PROFESSOR OF MATHEMATICS AND ASTRONOMY IN LAFAYETTE COLLEGE, PENNSYLVANIA.

THE TABLES COMPLETED, ON THE AUTHOR'S DECEASE, AND MAPS DRAWN

BY

SELDEN JENNINGS COFFIN, A.M.,

HOLLENBACH PROFESSOR OF MATHEMATICS IN LAFAYETTE COLLEGE, PENNSYLVANIA.

WITH A

DISCUSSION AND ANALYSIS OF THE TABLES AND CHARTS

BY

Dr. ALEXANDER WOEIKOF,

LATE SECRETARY OF THE METEOROLOGICAL COMMITTEE OF THE IMPERIAL GEOGRAPHICAL SOCIETY OF RUSSIA.

WASHINGTON CITY:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
[DECEMBER, 1875.]

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TABLE OF CONTENTS.

LIST OF PLATES.

PREFACE.

THIS work has been prepared by the joint agency of the late Professor Coffin and the Smithsonian Institution, the former furnishing the general plan and oversight of the work, and such parts of the labor as could not be satisfactorily confided to others; while the latter contributed the greater part of the material, and defrayed the entire cost of making all the reductions and numerical computations, except what was done by Professor Coffin, or was found in other works. The resultants at the academies in the State of New York, computed by Dr. Franklin B. Hough, and those at numerous places in Russia, computed by Mr. Wesselowski, and some few others, have been made use of.

This work may be considered an extension of Professor Coffin's former one on the "Winds of the Northern Hemisphere," so as to embrace the entire surface of the globe so far as it has been accessible to scientific observation.

In the words of Professor Coffin, "the design is to show primarily—

"1st. The *mean direction* in which the lower currents of the atmosphere move over all parts of the surface of the earth, including in the term '*lower* currents' all that part of the atmosphere on which direct observations can be made, whether by means of a vane or by the motions of the clouds.

"2d. The *ratio* that the progressive motion bears to the total distance travelled.

"3d. The *modifications* that the mean current undergoes in the different seasons[1] of the year.

"4th. The directions in which the forces[2] act that produce these modifications.

"5th. The amount of their intensities, reckoned on the same scale as that which determines the mean annual direction.

"6th. To show, by separate solutions for the surface winds and those indicated by the motion of the clouds, how the two differ, and how they differ according as we do, or do not take into account the difference in the velocity of the different winds; the discussion of this latter question being confined chiefly to the observations reported to the Smithsonian Institution from the year 1854 to 1857 inclusive.

"The data used for elucidating these points consist of series of observations on

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[1] To avoid confusion the months of December, January and February are designated as *winter* in the southern as well as the northern hemisphere, March, April, May as *spring*, etc.

[2] Monsoon influences.

winds made at 3223 different stations on land, and during numerous voyages at sea, extending from the parallel of 83° 16′ north latitude, to beyond the parallel of 75° south latitude (the extreme points ever reached by man) altogether embracing an aggregate period of over 18,500 years.

"The stations on land are distributed over its surface as follows:—

	Number of stations.	Aggregate number of years.
America	2077	over 12,380
Europe	740	" 4,130
Asia	244	496
Africa	76	131
Islands of the sea[1]	86	314

"Of these stations in America, about 1900 are within the limits of the United States, viz., over 1400 which reported to the Smithsonian Institution between the beginning of the year 1854 and the end of 1869, over 300 military posts that reported to the Surgeon-General of the United States Army, and some 100 to 150 other places. The observations at the military posts embrace all that were reported from the commencement of the system in the year 1822 up to the end of 1859, together with those at posts west of the Mississippi for the succeeding ten years also, or up to the end of 1869.

"At sea, between the parallels of latitude 60° north and 60° south, the observations are mostly taken from the Wind and Current Charts prepared at the United States Naval Observatory, under the direction of Capt. M. F. Maury, which cover the entire Atlantic, Indian and South Pacific Oceans, and all of the North Pacific except a comparatively small portion, the completion of which is much to be desired, lying between the meridians of 150° east and 165° west from Greenwich; and nearly every square of 5° in latitude by 5° in longitude is more or less fully represented. For the Arctic and Antarctic Oceans, and the Mediterranean, Black and Red Seas, the material is derived mostly from other sources. The observations on the ocean embrace a total of a little more than one thousand years.

"The whole material is arranged in the form of tabular series, which require no explanation beyond what is given in the headings of the several columns; and for more ready reference to the data from any particular place, or group of places, as contained in the tables, as well as with a view to a more scientific arrangement of the whole, and for convenience in the discussion, the entire surface of the earth is conceived to be divided into 36 zones by parallels of latitude drawn 5° asunder, commencing at the north pole, and proceeding southerly; and in each zone the places of observation are arranged in the order of their longitudes, commencing at the 180th meridian from Greenwich, and proceeding easterly.

"The method of reduction is the same throughout as in my former work. Instead of giving the prevailing direction, or that point or points of the compass from which the winds blow most frequently, and rejecting all the rest, the traverse of the whole is resolved, in the same manner as that of a ship at sea. The former method, which was once almost the universal one, and which still finds advocates, may be useful

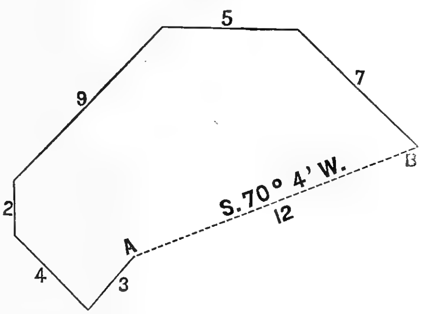
[1] Including Australia and Greenland.

in pointing out local peculiarities in the winds at different places, as affected by the geographical features of the surrounding country, but can give us no enlarged ideas of the movement of the air as a whole.[1] Suppose a particle of air to start from the point A, in the following diagram, and to move with a uniform velocity for 30 days as follows:—

From the	northeast	for an	aggregate	period	of	3	days
"	southeast	"	"	"	"	4	"
"	south	"	"	"	"	2	"
"	southwest	"	"	"	"	9	"
"	west	"	"	"	"	5	"
"	northwest	"	"	"	"	7	"

the diagram represents its motions, and at the end of the 30 days the particle is found at B. The bearing of the point A from it is now S. 70° 4′ W., its distance in a direct line equivalent to 12 days' travel, and the ratio of this distance to the whole distance travelled 40 per cent.

Fig. 1.



"Or, to express the same by formulæ after the method of Lambert, or of Mr. Charles A. Schott, of the United States Coast Survey,[2] or others, who have improved upon Lambert's method, let n represent the total number of observations (corresponding to the sum of the sides of the foregoing polygon, except A B); $\theta, \theta_1, \theta_2, \theta_3$ . . . . . the angles which the observed directions of the wind make with the meridian, reckoned round the compass from the north point eastward through 360°; S, S_1, S_2, S_3 . . . . . the number of observations recorded in these directions (corresponding to the foregoing sides taken separately); R the resulting distance A B, and ϕ the angle

[1] The following is an extract from a letter of the author, in 1871, on this point: "The question as to the proper mode of discussing winds depends on what we wish to ascertain or point out. If it be to show their sanitary effect, or what winds one is likely to experience at any given place, Lambert's formula is manifestly inadequate, nor was it designed for that purpose. But, if the object be to ascertain in what direction the air, subject to observation, moves as a whole over a given place, it is equally obvious that the only proper method is to resolve its traverse; and to abandon this method would, in my view, put the science back a third of a century. It was the chaotic character of the results that came from the method formerly in vogue, that first drew my attention to the subject, and led me to conceive the idea of resolving the traverse of the winds: ignorant of Lambert's formula, as well as of the fact that Prof. Kaemtz was doing the same thing. The soundness of the principle seemed so obvious, and the results of its application so satisfactory, all over the globe, that I had not supposed it possible that it could ever be called in question."

[2] See his reduction of Dr. Kane's Arctic observations, published in the Smithsonian Contributions to Knowledge, Vol. XI.

which the direction of A B makes with the meridian at B, or ($\phi + 180°$) the angle which it makes at A; then we have

$$\text{tang. } \phi = \frac{S \text{ sine } \theta + S_1 \text{ sine } \theta_1 + S_2 \text{ sine } \theta_2 + S_3 \text{ sine } \theta_3 \text{ etc. } \ldots \ldots}{S \cos \theta + S_1 \cos \theta_1 + S_2 \cos \theta_2 + S_3 \cos \theta_3 \text{ etc.}} = \frac{a}{b}$$

putting for the sake of brevity the sum of the terms in the numerator equal to a and of those in the denominator equal to b.

"The value of ϕ, expressed in the ordinary method of reading bearings with reference to the four cardinal points, is given in the tables in the fifth column from the right, and as the numerical value of the tangent of ϕ is the same for angles in each of the four quadrants, recourse must be had to the algebraic signs of the numerator and denominator. If both are +, the direction is in the northeast quadrant; if the numerator is + and the denominator —, it is in the southeast quadrant; if both are —, it is in the southwest quadrant; and if the numerator is — and the denominator +, it is in the northwest quadrant; thus:—

	a	b
Northeast quadrant	+	+
Southeast "	+	—
Southwest "	—	—
Northwest "	—	+

Also we have

$$R = \sqrt{a^2 + b^2} = \frac{a}{\text{sine } \phi} = \frac{b}{\cos \phi}$$

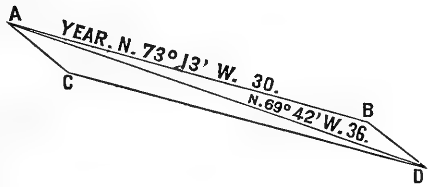
the last two forms being the most convenient for computation. the values of $\frac{R}{n}$ are given in the tables in the fourth column from the right.

"Where the places of observation are isolated, resultants are computed for each separately; but where there are several in the same vicinity, they are often grouped together, and the resultants for the group only computed. The observations made at the different stations in a group are ordinarily combined by simply adding them together, in the same manner as if they had all been made at one station; but it did not seem best to adhere uniformly to this method. Suppose, for illustration, that the group consists of but two places, and that the number of observations made at them is very unequal, at each of which the number of observations is sufficient to determine the character of its winds; but that, owing to local influences, the results at the two differ widely. Now if the number of observations at the two places was nearly equal, their sum would afford a tolerable mean between the two; but if very unequal, the place which had the greater would have more weight than properly belonged to it, and a more reliable resultant could be obtained, either by equalizing the numbers representing the observations, or by computing a new resultant from the separate ones of the two places. On the same principle, when in any group, or at any place, the number of observations in the different seasons of the year differ materially, the resultant for the year is computed, not from the sum of all the observations, but from the resultants for the separate seasons.

"The method of computing *monsoon influences*, or the forces which deflect the wind from its mean annual direction in the different months or seasons of the year,

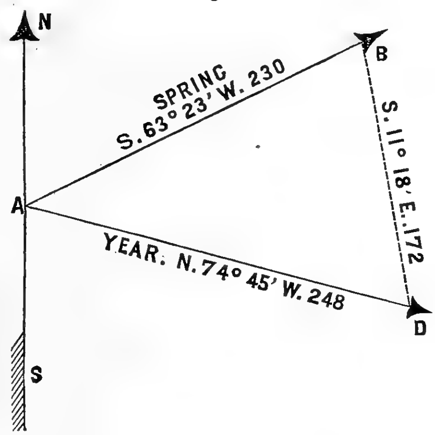
is as follows: It is assumed that if no such forces existed, the mean direction and relative progress of the wind would be the same for each month of the year, and equal to one-twelfth of the mean annual progress. If, therefore, according to the usual method of applying the 'parallelogram of forces,' we make the progress in any month the diagonal of a parallelogram, and one-twelfth of the mean annual progress one of the sides, either of the contiguous sides will represent the deflecting force, both in quantity and direction. Thus, for example, at Amherst, Massachusetts, Fig. 2, the resultant for January reads N. 69° 42′ W. .36, and for one-twelfth of the mean for the year, measured on the same scale, N. 73° 13′ W. .30. Draw A B in the direction N. 73° 13′ W. and make its length .30. Also draw A D in the direction N. 69° 42′ W. and make its length .36. Complete the parallelogram, and the side A C or B D will show the direction and amount of the deflecting forces, viz., N. 52° 47′ W., .0632; or a little more than one-fifth as great as the force which determines the mean annual resultant. This value is given in the tables in the second column from the right under the head of 'Force' of monsoon influences.

Fig. 2.



"Figure 3 shows the same *for seasons*, where, as in the case of Easton, Pa., the resultant for the spring is represented by A B, which is S. 63° 23′ W., length .230; and that for the entire year by A D, N. 74° 45′ W., length .248; D B is the monsoon influence, which is from S. 11° 18′ E., length .172. For the most part the deflecting forces are approximations, determined, with tolerable accuracy, by mechanical construction upon a large drafting scale, though in a few cases they were computed trigonometrically, as in the examples here adduced." * * *

Fig. 3.



An inspection of Plate 26 will give a more full illustration of the mode of construction and delineation of these forces, as well as show how their computation afforded a ready test of the accuracy of the computations of the resultants from which they were derived, for these forces must be *in equilibrio*, however diverse their separate directions and amounts; were it not so, the particle of air at the end of the months and seasons that constitute its annual course would not be found at the same point that was indicated by the resultant for the year.

On pages 50–51 is a list of authorities cited; to this Professor Coffin intended to add the names of many who had aided him by making or transmitting records of observations. This is an omission that cannot now be supplied. A pencilled statement records his acknowledgment of aid from Dr. Franklin B. Hough, of Albany, N. Y., and grateful mention of President Cattell, and his associates in the Faculty of Lafayette College, for their constant sympathy and encouragement in the work; particularly in services rendered in translations from foreign languages by Prof. Francis A. March, LL.D., and Prof. Augustus A. Bloombergh, Ph.D., also to Prof. Theodore F. Tillinghast, Mr. Thomas C. Green, of Mechanicsville, N. Y., Prof. J. D. Whitney, of Harvard College, the Rev. David Craft, of Wyalusing, Pa., the Rev. John S. Woodside, of Kapurthala, India, and the Rev. Stephen Bush, of Waterford, N. Y., for aid; and to Mr. Henry Mansfield, of Easton, for care in computing the monsoon influences, most of which were drafted by him.

Professor Coffin records the fact that this work lacks observations known to have been made at the following places, but which he failed to secure, viz.:—

Barbacoas, Venezuela, 1852 and 1854.
Firmagungulum.
Gaboon Station, Africa.
Leon, Nicaragua, May and July, 1849.
Manilla.
Ponce, Porto Rico.
Singapore.

At the time of the death of Professor Coffin, in 1873, Series A, and the General Tables, Series B, were mainly completed. Though all the pages of the latter Series were numbered in manuscript, here and there were blanks left to be filled. In the observations from Spain, India, and many places in Zones 10 to 18, the trigonometrical work and monsoon influences remained to be computed. No Plates had been prepared.

The supply of these deficiencies was undertaken by his son and successor in the College, Professor Selden J. Coffin. He devised and drew the plates, added the Numerical Index to Stations found in Series A, pages 52–66, revised the entire work, and read the proofs. He also prepared Series C, Velocity Tables, pages 637 to 654, and made the deductions connected with them.

This work has been executed with a feeling of pious regard for the memory of a venerated parent, interest in science, and a devotion which merits special commendation.

The Institution also availed itself of the meteorological knowledge and power of original investigation of Dr. Alexander J. Woeikof, Secretary of the Meteorological Committee of the Imperial Geographical Society of Russia, during his late visit to this country, for a series of deductions and analyses from the tables and charts, which the untimely death of Professor Coffin prevented his undertaking. These discussions and analyses are found on pages 623 to 714, and are wholly from the pen of Dr. Woeikof, who also supplied the material in the form of "Addenda" at the end of the respective zones, and carefully revised the whole work.

For the better illustration of Dr. Woeikof's discussion, three plates have been reproduced from the important paper by Alexander Buchan, in the Transactions of the Royal Society of Edinburgh,[1] and for which acknowledgment is here made. These plates exhibit by isobaric lines the mean pressure of the atmosphere over the earth for the year, and for January and July.

This work is given to the world with confidence that it will be an acceptable contribution to science, worthy of the Smithsonian Institution, and a permanent memorial of one who cheerfully devoted to its preparation much of the energies of a long life.

JOSEPH HENRY,
Secretary S. I.

WASHINGTON, *November*, 1875.

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[1] The mean pressure of the atmosphere, and the prevailing winds over the globe for the months and for the year, Part II., by Alexander Buchan, M.A., Secretary of the Scottish Meteorological Society.—Trans. of the Royal Soc. of Edinb., vol. xxv. 1869.

INTRODUCTION.

ORIGIN AND PREPARATION OF THE MEMOIR ON THE WINDS OF THE GLOBE.

COMMUNICATED BY PROFESSOR SELDEN J. COFFIN.

THE decease of Professor Coffin occurred before he had prepared any descriptive text of this work, save what is given in the Preface, and therefore a monograph found among his papers has special interest, as intimating the probable line of treatment he would have pursued, and indicating topics of research in which he was engaged, or to which his attention had been directed. It appears to be the substance of a statement made to the National Academy of Sciences about two years prior to his death. The title is, "A History of the Present Condition of an Investigation of the Winds." Its contents, somewhat abridged, are as follows:—

"This is not intended as a formal communication on the Winds, but rather a brief narration of what I have accomplished, after having been engaged for many years in the investigation of the laws that govern the circulation of the atmosphere over the earth's surface, with the attendant phenomena.

The following are the problems investigated:—

1st. What is the mean direction of the wind over the different parts of the earth's surface? Or in what direction does the air, as a whole, move over them?

2d. What is the progressive motion of the air in this mean direction? Or, if data be wanting for determining this in *miles*—and we assume that the average velocity of winds from all points of the compass is the same—during what proportion of the *time* must the wind blow in this mean direction, so that if the remainder of the time were occupied by calms, or by winds whose conflicting movements neutralize each other, the resulting general progressive motion of the air, as a whole, would be the same as it now is?

3d. What is the direction and amount of the force that deflects the wind from its mean annual direction in any given month, or season of the year? Or, in other words, what must be the direction of a wind during any given month or season of the year, and during what proportion of the time must it blow, so that combined with the movement of the air in its mean annual direction, it may afford

a resultant the same as that for the month or season? The former may be regarded as the wind that would exist if the surface of the earth were homogeneous, and the sun ever over the equator; and the latter as that which is due to the change of temperature in the different parts of the year, in connection with the character of the neighboring regions, chiefly with respect to land and water. These deflecting forces, which are found almost everywhere, I denominate *monsoon influences*, and where they are so great as to decidedly control the direction of the current, the resulting winds are the well-known monsoons.

4th. What relation exists between the direction of the wind and the pressure of the atmosphere? Or, what winds are, on an average, attended by a rise in the barometer, and what by a fall, and at what average rate?

5th. Also what connection exists between the direction of the wind and the pressure, temperature, and humidity of the atmosphere, the state of the sky, and the amount of rain-fall?

"These are not the only questions of interest connected with the study of the winds (for their relations to hygienic and agricultural considerations merit close investigation), but they are the only ones to which I have given much attention. And, as to the latter, my investigations have been confined chiefly to the point first named in it.

"The proper scientific investigation of each of these questions is comparatively of recent date, extending back not much further than the year 1830. Vast collections of observations on the winds had been made previously, which are now of invaluable service under the improved methods of studying them; and some of the more obvious phenomena, such as the 'trade winds,' monsoons, and regions of calms, were well known. But the usual, and indeed the only method of discussing observations of the winds, was to sum up the number that was observed from each of the several points of the compass, to regard that direction which afforded the largest sum as the prevailing direction, and to make no account of the rest. This method often served to point out the geographical features of the surrounding country, rather than to afford any information of value in regard to the real question discussed. It was about the year 1836, perhaps a little earlier, that the idea of resolving the traverse of the winds on the principle now so familiarly known as Lambert's formula, first occurred, nearly simultaneously, to Prof. Kaemtz in Europe, and to Prof. Loomis and myself in this country, to each without the knowledge of the others. [This method is fully described and the formulæ stated in the Preface to this work.]

"My first efforts were directed to the winds at Dartmouth College, New Hampshire, as then reported monthly in the *Vermont Chronicle*, 1836, and having soon afterward removed to Ogdensburg, New York, I applied the method to the winds there, as recorded momentarily by a self-registering vane that I had constructed for the purpose. The results at the latter place were published in the annual report of the Regents of the University of the State of New York for the year 1838.

"In the year 1824, the Legislature of New York had made an appropriation for establishing a system of meteorological observations at different academies in the

State, the tabulated results of which were, for many years, published annually in the Reports of the Regents. In preparing these tables, the prevailing direction of the wind was computed in the then common though imperfect manner already described, and the results were as chaotic as can well be imagined. I concluded to try the new method upon them, and the results were published in the Regents' Report for 1840, accompanied by a note from the Secretary of the Board, inviting special attention to them. They were of the most satisfactory character, and when mapped showed the course of the dominant current of air over the State, with occasional deflections, dependent upon the geographical features of the adjacent country, as clearly defined as the courses of the Hudson or the Mississippi rivers. Encouraged by this, I undertook the task of collecting observations on winds over the entire extent of the United States, which was then no easy matter, as there were no such instrumentalities, to aid in the work, as are at present accomplishing so much—the Smithsonian Institution and National Observatory not being in existence, and the only collection of observations, covering any wide extent of country, was that at the Surgeon General's Office in Washington. This had been commenced under the Surgeon General, Dr. Lovell, in the year 1822, and consisted of registers kept at different military posts, and others that had been forwarded there at the request of the late Prof. James P. Espy, who was then connected with the office. None of the latter had been published, and of the former, only those for the first nine years, and embracing only from eleven to twenty posts, the number differing in different years. The rest was all in manuscript, unpublished and unreduced. My attention was called to this collection by the late Col. J. J. Abert, Chief of the Topographical Bureau, who, in 1839, invited me to visit Washington for the purpose of inspecting it. Here I was not only allowed free access to all the manuscript material in the office, which I spent several weeks in examining and reducing, but when I left, I was permitted to take home with me all the more valuable registers of Mr. Espy's collection, indeed all that I desired, and to make the requisite computations from them there. Beyond what I thus obtained, I was dependent almost solely on private correspondence for the means of prosecuting my proposed work.

"It was while engaged in slowly collecting material that, at a meeting of the American Association of Geologists and Naturalists, held at New Haven, in 1845, I was appointed a committee to report on the present state of our knowledge of the winds of North America and the North Atlantic Ocean. This greatly enlarged my field of labor, and as I knew that I could obtain material such as I wanted from many European countries, I concluded to enlarge it still further, and make it embrace the entire northern hemisphere.

[For this purpose he availed himself of all the materials relative to meteorology found in the libraries of New York, New Haven, Philadelphia, Princeton, and Washington. As much of this material was unreduced, he was obliged to spend a considerable portion of time at each of these places in the performance of this work.]

"Observations of the winds at several places in Persia, Syria, Palestine, and at Constantinople, were kindly made at my request, for a year or two, by mission-

aries residing there, and forwarded to me in manuscript. Officers of the British Hudson's Bay Company were so kind as to copy for me in manuscript the entire series of observations on winds at several of their posts in the remote parts of British America—at one of them for a period of seven years. To secure observations at sea I was aided by the late Gerard Hallock, Esq., one of the editors of the *Journal of Commerce*, in making arrangements with ship-owners in New York, for the loan of the logs of their different vessels. I had not, however, proceeded far in this latter line of research, when Lieut. Maury commenced his labors in the same direction at the National Observatory; and his facilities for procuring material were so superior to mine that I relinquished the field to him, and relied on his published charts for the data I needed at sea, except in the latitudes above 60°, beyond which his charts did not extend.

"It was not till three years after the date of my appointment by the Association that I was prepared to report, which was at the first meeting of the American Association for the Advancement of Science, at Philadelphia, in 1848; the body which appointed me having in the mean time changed its organization and name to that just given. The report, derived from a period of over 2000 years of observation at 550 stations, contained the announcement 'that between north latitude 33½° and 60° there is a general current from a little to the south of west, extending entirely around the globe; but that, as those limits are approached, it gradually loses its decided character, and at the limit, on either side, all trace of any fixed direction disappears, the current at any place being controlled entirely by local influences, as illustrated in the winds of Augusta, Georgia. After passing the limit on the south, a current from the opposite direction sets in, which, as we go south, gradually assumes a more decided character, till we come fully within the limits of the trade-winds. North of latitude 60° there are indications that a uniform current that comes down from the north, in the polar regions, veers towards the west, thus establishing a third system, which breaks up at about latitude 60°.' It was while preparing this report, and by applying the improved method of investigation to the winds in the high northern latitudes, that the interesting discovery was thus made of the system of the polar winds, entirely distinct from those which prevail south of it, the physical causes of which have since been so admirably demonstrated by Prof. Ferrel, and which is now beginning to be generally recognized as a valuable contribution to meteorology.

"I may here remark that when first announced all the evidence I had of the existence of the polar system of winds was derived from observations made in the northeastern portions of the American continent, Greenland, Northern Iceland, Northern Spitzbergen, and the seas adjacent; the limit attaining so high a latitude on the eastern continent that only the extreme north of Europe and Northern Siberia fell within it, and I was not able to procure reliable data from these inhospitable regions. I have, however, since obtained an abstract of the observations of Lieut. Anschu, for nearly two years, made on the shore of the Arctic Ocean, in Siberia, and valuable material from several places in Northern Finland, Southern Spitzbergen; from Kane, Hayes [and Hall], in the Greenland Seas; and also from the vicinity of Behring Strait on both sides, contributed by parties employed

in explorations for the Russo-American telegraph line. The results of all these observations, with the exception of those of Dr. Kane, at Van Rensselaer Harbor, are in accordance with the doctrine in question. And in regard to these latter, which are utterly discordant, it is worthy of remark, that while the mean direction of the wind is almost diametrically opposite to what it is at Port Foulke, only a few leagues distant, the progressive motion in the mean direction is very small, indicating local disturbance. For I have found, as a very general rule, the world over, that wherever, from local causes, the atmospheric current is diverted from its mean course, the progressive motion is reduced. Northeastern Asia merits a more careful study, and I have long made efforts to procure observations therefrom, but without any prospect of success, until 1869, when I was so fortunate as to receive from the Meteorological Committee of the Geographical Society of Irkutsk, in Eastern Siberia, an offer of co-operation. It is still difficult to obtain the requisite observations, as the region to be studied lies north of all the settled parts of Siberia, and aid can probably be had only from missionaries of the Russian church, stationed at some of the settlements on the rivers flowing into the Arctic Ocean. In respect to these localities I acknowledge aid received through the kindness of Col. Thomas W. Knox, of New York, and George Kennan, of Norwalk, Ohio.

"In the same report, above named, I pointed out and illustrated the peculiar 'S-shaped' curves described by the wind in its mean course for the different months or seasons of the year, on both sides of the Atlantic, though I was not then prepared to fully explain them, nor did I perceive the interesting conclusions about to be deduced from them. [Illustrations of these curves are found in Plate 26, which also exhibits the graphical method of deriving from them the monsoon influences, which determine the direction and amount of their curvature. The manner of computing them is explained in the Preface.]

"The results reached in this report, with the data from which they were derived, forming a quarto volume of 200 pages, were subsequently published in the Smithsonian Contributions to Knowledge, constituting a part of Vol. VI. This, though as perfect as the materials known could make it, and pointing out truths of importance never before recognized, was, as was soon perceived, not what it ought to be. On sending it abroad the meager filling up of portions of the eastern continent was noticed, and persons residing there kindly lent their aid in procuring material to fill them. Among these I may mention particularly Chevalier Kahnikoff, Mr. Wesselesky and Prof. Kaemtz of Russia, and Prof. Buys Ballot, Director of the Royal Observatory of Holland, from whom collectively I received records from not less than one hundred new places; and by the exchanges and collections of the Smithsonian Institution many more were added. Subsequently additional offers of aid were received from the eminent European meteorologists, Alexander Buchan, of Scotland, Dr. Alexander J. Woeikof, of Russia, Baron Meydall, and Messrs. Aguilar and Mack. In the mean time in this country, the acquisition of California, New Mexico, and Arizona largely increased the number of military posts at which observations were taken, while by the active efforts of the Smithsonian Institution there was secured a vast number of new observers in all parts

of the country, and many of them at points very remote. Lieut. Maury was also prosecuting his work on the seas, and had covered by his published charts, the entire Atlantic and Indian Oceans, the South Pacific, and all the North Pacific except a portion of comparatively small area, between the meridians of 150° E. and 165° W. from Greenwich, the chart for which was referred to by him in his latest report as 'not yet printed';—implying that it was substantially complete in manuscript, and, if so, it would seem very desirable to have it completed and published.

"In view of all these facts, and also that my original work lacked scientific arrangement, it was thought desirable to revise and enlarge it, and the Smithsonian Institution generously made appropriations to aid in the computations, as well as put at my disposal all the material at its command. The plan proposed for the new work was that followed in the present treatise, to divide the earth into 36 zones, by parallels of latitude 5° asunder, and so extending from the north to the south pole; in each of these zones commencing at the 180th meridian from Greenwich, and proceeding easterly according as observations furnished the data, around the earth to the same meridian again. Between the parallels of latitude 60° N. and 60° S. where observations are more abundant, records have been obtained from about 2000 places in North America and the West Indies, 27 in South America, 23 at islands in the Atlantic, over 700 in Europe, 206 in Asia and the East Indies, 70 in Africa, 48 in Australia and islands of the Pacific and Indian Oceans, including the extreme southerly ones of Kerguelen's Land and Heard's Island—the most southerly points where man has remained for any considerable length of time; and for over 1000 years at sea. If this area be divided into geographical squares, by drawing meridians and parallels of latitude 5° asunder, of the 1728 squares so formed, 1402 are represented in the contents of this work. The 326 vacant squares from which no observations have been obtained are as follows:—

21 in North America, mostly in British America,
40 in the interior of South America,
None in Europe,
75 in Central Asia,
66 in Africa,
15 in the interior of Australia,
108 in the North Pacific Ocean, and
1 in the South Pacific Ocean.

North and south of the parallels of 60°, it is more difficult to obtain observations, and the material is therefore less abundant. Between 60° and 65° N., results are given for 57 stations, embracing a period of 316 years, mainly in Northern Russia. Further north, about 34 stations have been obtained; so that all these 36 zones are represented in the work except three, one about the north pole and two about the south, which had never been visited by man.

I had proceeded so far with the work in the southern hemisphere that, in 1859, I read a paper at the meeting of the American Association at Springfield, Mass.,

in which I showed that observations clearly indicated, and, indeed, all but demonstrated, the existence of a system of winds about the south pole, and extending from 25° to 30° from it, analogous to that which had been proved to exist about the north pole. Although the visits of explorers to this inhospitable region had been limited to periods of a few days each—too short a time for any well-defined results—yet the observations disclosed the remarkable fact that while in the contiguous zone further north, and between it and the trade-winds, the mean direction of the wind was always from some point between N. and N. W., with most wonderful uniformity, far more so than in the northern hemisphere, owing undoubtedly to the less amount of land to obstruct its passage, yet out of fifteen visits by explorers to as many different points in this southern polar zone, in none was the wind from any point in the N. W. quarter, a series of coincidences without a parallel, if merely accidental, and no such system exists.

[Next, in this monograph, occur the author's remarks on the influence of difference of velocity in modifying the mean direction of the wind, which have been placed on pages 637–639, in the introduction to the Velocity Tables. Though a longer time would be desirable, the discussion is limited to observations for a period of four years, owing to the great labor and expense of making the computations.]

"The discussion of the remaining point named as belonging to the investigation, viz., the connection between the direction of the wind and the rise or fall of the barometer, may not be prepared for appearance in my new work, though it is not inferior in point of interest and practical value to either of the others. It was commenced in its present form about the same time as that of the mean direction of the wind (1836–8), and, like that, nearly simultaneously in Europe and in this country, neither party having any knowledge of what the other was doing. Inquiries had been previously instituted as to the direction of the wind which usually attended a maximum or a minimum pressure of the atmosphere, and statements had been published in England, and in this country also (?), that the former was N. E. and the latter S. W.; but the far more important question was, "What change takes place in the barometer during the continuance of different winds?" And it was to this point that the new investigation was chiefly directed. The statements just quoted may be true, but the inference drawn by some therefrom, that winds from the former point tended specially to raise the barometer, and those from the latter to depress it, was not well founded. It was as though the astronomer should conclude that the difference between the mean and true motions of a planet is greatest about midway between the apsides of its orbit, because the equation of the centre is greatest there. If winds from the west, northwest, and north tend to raise the barometer, and those from the east, southeast, and south tend to depress it, and if the wind is prone to shift its direction in the order just named, it is obvious that when it reaches the N. E. point, the barometer must show the accumulated effects of all the winds through the preceding 180 degrees, and so of course stand high, although the N. E. wind itself were neutral in its influence. To study the question properly, we need either self-registering instruments (both barometer and wind-vane), or very frequent observations; and conse-

quently there are but few places where we have the requisite data. The former of these instruments it has been found difficult to construct so as to work satisfactorily.

"My first effort as to the problem was made in the year 1837, at Ogdensburg, N. Y., where I erected a self-registering vane, and made arrangements for frequent observations of the barometer. The definiteness of the result surprised me. It divided the horizon into two perfectly distinct portions, the winds from one of which were attended with an average rise of the barometer, and those from the other with a fall. And although my vane registered from 32 points of the compass, there was no intermingling of the points in the result. But was the law that I had thus discovered, a general one? Or, was it owing to something peculiar to that locality? To test this, I proceeded to make similar computations for twelve other places in this country and elsewhere, according as the observations to which I had access furnished data applicable to the purpose, and while so employed I found that Prof. Dové, of Berlin, had done the same for five places more, which I united with my own, making eighteen in all. [These are delineated in Plate 23.]

"Early in these investigations the question arose whether the results favored the rotary or centripetal theory of storms; the indications were that the motion was both rotary and centripetal. I was not then fully prepared to submit what I had offered for publication, except in outline, and I deferred to do so. Since 1853 I have added nothing to it, except the results of Dr. Louis Berlandier's observations at Matamoras in Mexico. The following gives in a tabular form the results of all the observations since that date:—

TABLE I.

SHOWING THE AVERAGE RATE OF RISE OR FALL OF THE BAROMETER, IN DECIMALS OF AN INCH, PER TWENTY-FOUR HOURS DURING WINDS FROM DIFFERENT POINTS OF COMPASS.

Course.	Boston, 4 months.	Franklin Inst., Phila., 1839, 1841 and 1842 in part.	Iceland, June 1, 1811, to June 1, 1812.	London, 3 years.[1]	Bogoslowk, Ural Mts., Jan. 1 to Aug. 1, 1838.	Pekin, China, April and May, 1842.	Barnoule, Siberia, Jan. and Feb. 1838.	Sitka, Rus. America, April, 1842.
N.	+.014	+.021	+.131	+.098	+.055	+.174	—.133	—.280
N. E.	—.003	+.003	—.063	+.036	—.016	—.052	—.147	—.260
E.	—.025	—.099	—.169	—.024	—.013	—.225	—.004	—.074
S. E.	—.109	—.162	—.235	—.098	—.064	—.191	—.085	+.032
S.	—.083	—.171	—.175	—.096	—.078	—.133	+.026	+.189
S. W.	—.057	—.105	—.043	—.049	—.005	—.043	+.094	+.185
W.	+.006	+.042	+.102	+.022	+.022	+.080	+.122	+.077
N. W.	+.010	+.084	+.125	+.064	+.076	+.102	+.149	+.015

[1] Dové.

TABLE I.—CONTINUED.

Course.	Ogdensburg, New York, one year.	Girard College, Phila., June 12, 1840, to May 31, 1841.	Bermuda, 1840, 1841 and 1843, in part.
North	+.080	+.160	+.095
N. by E.	+.095	+.141	+.027
N. N. E.	+.016	+.085	—.003
N. E. by N.	—.041	—.026	—.025
N. E.	—.105	—.064	—.014
N. E. by E.	—.139	—.137	—.021
E. N. E.	—.183	—.218	—.013
E. by N.	—.173	—.158	—.025
East	—.149	—.303	—.033
E. by S.	—.146	—.346	—.069
E. S. E.	—.122	—.130	—.059
S. E. by E.	—.097	—.635	— 047
S. E.	—.123	—.184	—.056
S. E. by S.	—.155	—.111	—.075
S. S. E.	—.156	—.244	—.126
S. by E.	—.144	—.191	—.105
South	—.178	—.186	—.088
S. by W.	—.131	—.074	—.032
S. S. W.	—.087	—.164	—.023
S. W. by S.	—.034	—.100	—.028
S. W.	+.014	—.090	—.026
S. W. by W.	+.060	—.019	—.020
W. S. W.	+.066	—.024	—.006
W. by S.	+.137	+.064	+.015
West	+.125	+.100	+.078
W. by N.	+.155	+.171	+.103
W. N. W.	+.219	+.263	+.103
N. W. by W.	+.250	+.159	+.080
N. W.	+.266	+.184	+.068
N. W. by N.	+.219	+.208	+.092
N. N. W.	+.192	+.198	+.121
N. by W.	+.193	+.110	+.126

Cour. e.	Newfoundland.	Nantucket, 1838, 1840 and 1841, in part.	North Atlantic Ocean, 20 days [1]	Greenwich, England, 9 years.	Paris, France, 10 years.[1]	Dantzic, Prussia, 15 years.[1]	At sea, in the Southern Hemisphere, 8 months.[1]
North	+.337	+.165	+.088	+.237	+.020	+.050	—.037½
N. N. E.	+.156	+.060	—.048	+.159	—.011	+ 010	—.035
N. E.	+.080	+.033	—.095	+.042	—.015	+.041	—.023
E. N. E.	—.195	—.251	—.097	—.126	—.076	—.013	—.017
East	—.207	—.190	—.084	—.268	—.084	—.010	—.004½
E. S. E.	—.420	—.361	—.071	—.312	—.092	—.003	+.001
S. E.	—.283	—.254	—.066	—.249	—.076	—.016	+.009
S. S. E.	—.458	—.262	—.082	—.500	—.076	—.051	+.024
South	—.320	—.174	—.122	—.395	—.074	—.069	+.045
S. S. W.	—.178	—.141	—.117	—.169	—.074	—.067	+.064½
S. W.	+.060	—.085	—.047	—.103	—.014	—.012	+.073
W. S. W.	+.097	+.012	+.031	+.037	+.004	+.021	+.037½
West	+.111	+.122	+.088	+.074	+.066	+.008	—.010
W. N. W.	+.304	+.172	+.141	+.259	+.090	+.064	—.032
N. W.	+.289	+.186	+.211	+.226	+.076	+.065	—.035
N. N. W.	+.175	+.231	+.210	+.075	+.090	+.088	—.035½

[1] Dové.

"Regarding the rate of rise or fall in the barometer during winds from each point of compass, given in the preceding table, as the measure of the force that produces it, and reducing these forces to a single force, in the usual way, we obtain the results in the second, third, and fourth columns of the following table; to which I have added, in the fifth column, the mean direction of the wind.[1] The arrows within the inner circle of the Barometrical Wind-roses [Plate 23] exhibit these results to the eye.

TABLE II.

Points of Maximum and Minimum Pressure.

Place of observation.	Point of maximum pressure.	Point of minimum pressure.	Mean line of maximum and minimum pressure.	Mean direction of wind.
Ogdensburg,	N. 51° 2′ W.	S. 58° 14′ E.	N. 54° 17′ W. to S 54° 17′ E.	S. 58° 34′ W.
Newfoundland,	N. 35 50 W.	S. 42 12 E.	N. 39 31 W. to S. 39 31 E.	S. 78 4 W.
Girard College,	N. 4 4 W.	S. 53 12 E.	N. 44 57 W. to S. 44 57 E.	N. 74 5 W.
Franklin Inst.,	N. 50 16 W.	S. 21 10 E.	N. 28 31 W. to S. 28 31 E.	S. 75 4 W.
Boston,	N. 28 21 W.	S. 14 39 E.	N. 18 56 W. to S. 18 56 E.	N. 88 20 W.
Nantucket,	N. 35 37 W.	S. 48 3 E.	N. 42 36 W. to S. 42 36 E.	N. 77 0 W.
Bermuda,	N. 41 32 W.	S. 36 19 E.	N. 39 22 W. to S. 39 22 E.	S. 45 48 W.
North Atlantic,	N. 54 49 W.	S. 51 31 E.	N. 53 17 W. to S. 53 17 E.	S. 83 25 W.
Iceland,	N. 39 18 W.	S. 48 48 E.	N. 45 11 W. to S. 45 11 E.	N. 86 35 W.
London,	N. 13 55 W.	S. 17 4 E.	N. 15 38 W. to S. 15 38 E.	N. 88 38 W.
Greenwich,	N. 34 6 W.	S. 34 4 E.	N. 34 5 W. to S. 34 5 E.	S. 60 14 W.
Paris,	N. 51 34 W.	S. 48 48 E.	N. 50 0 W to S. 50 0 E.	S. 70 30 W.
Dantzic,	N. 29 48 W.	S. 6 37 E.	N. 20 5 W. to S. 20 5 E.	S. 68 7 W.
Ural Mountains,	N. 34 51 W.	S. 29 46 E.	N. 32 18 W. to S. 32 18 E.	N. 83 21 W.
Barnoule,	N. 87 11 W.	N. 43 49 E.	S. 70 19 W. to N. 70 19 E.	S. 35 3 W.
Pekin,	N. 31 47 W.	S. 54 34 E.	N. 45 10 W. to S. 45 10 E.	S. 74 22 W.
Russian America,	S. 30 15 W.	N. 29 16 E.	S. 29 41 W. to N. 29 41 E.	S. 55 37 E.
S. Hemisphere,	S. 25 21 W.	N. 9 53 W.	S. 10 22 W. to N. 10 22 E.	N. 83 44 W.[1]

"The results shown in the foregoing tables and diagrams confirm all that I had previously adduced, and establish conclusively, I think, the following facts, at least in the zones of westerly winds.

"1st. That the horizon is divided by nature into two well-defined portions, the winds from between the division points on the one side being all attended with a rise in the barometer, and on the other with a fall. This is found true at all the stations where there are reliable observations. Even where they are taken for thirty-two points of the compass, there is no intermingling.

"2d. That in the northern hemisphere, one of these points lies in a southwesterly direction, and the other in a northeasterly. Barnoule in Siberia, and Sitka in Alaska, look like exceptions; but at both these places the results were computed

[1] The observations at sea were taken in various latitudes, and those on the direction of the wind not reported; so that it was impossible to know accurately what mean direction to assign. But taking into account the circumstances of the voyages during which they were taken, I have assumed, as approximately correct for the southern hemisphere, one that I computed from a zone on Lieut. Maury's charts, extending from lat. 40° to 45° S., and from long. 20° E. to 120° W.; and for the North Atlantic, one deduced from about twelve years' observations, taken north of lat. 36°

for a short time only,[1] and might be somewhat modified by making use of a longer series of observations. It is probable, moreover, as I have shown elsewhere, that Sitka lies without the zone of westerly winds, and where a different law may prevail.

"3d. That the line of its approach generally makes an angle, more or less acute, with one drawn to the point of maximum pressure.[2] The only exception is at Hamilton,[3] Bermuda, where it is slightly obtuse (92° 40′). Nor is the result different, if, instead of regarding the mean resultant of all the forces which raise the barometer as the point of maximum pressure, we (perhaps more properly) regard each fall as a negative rise, and *vice versa*, and then obtain one mean resultant for the whole. The fourth column in Table II. was computed in this way, and the results are shown on the Barometrical Wind-roses [Plate 23] by a broken line. [For application of this discussion to the storm-curve, see author's article on pp. 89–101, Proceedings of the American Association for the Advancement of Science, Cleveland, Ohio, 1853.]

"The plan of the 'Winds of the Globe' contemplated giving resultants at each place, for each month and season, with monsoon influences for the seasons. The work would be much more perfect, if this could be done in all cases, but the magnitude of the labor forbade it. For a like reason, as well as to render it possible to represent the results on maps, it was thought judicious to group the places of observation by districts, where they were numerous, instead of making computations for each place separately. With the facilities we have devised, in the way of special tables to aid in the computations, we have found that where observations, recorded for 16 points of the compass, have been collected and properly arranged for computation, an active computer can calculate about 35 resultants in a day. When the observations are recorded for 32 or more points of compass, the labor is of course much greater, but there are comparatively few such. On the other hand, there are many where they are recorded for only 8 points. If we include the calculation of the monsoon influences, which has been done chiefly by plotting, the average per day will not exceed the number just named."

[The exact state of forwardness of the work at the time of Professor Coffin's decease is fully related in the preface.]

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[1] One month at Sitka, and two at Barnoule.

[2] Further on, in the same article from which these conclusions are quoted, and which may be found on page 89 of the Proceedings of the American Association for the Advancement of Science, 1853; Prof. Coffin determines this angle as 65°; and a reference to the article plainly shows that this determination was reached, without any knowledge by him of its having been accomplished, or even attempted, at that time, by any other writer on the subject, although the reference on page 664, of this work, conveys the intimation that this principle is generally referred to in Europe as "BUYS-BALLOT'S LAW OF THE WINDS". But it does not there appear at what date Prof. Ballot had made the announcement, with which he is so accredited.

[3] It is worthy of remark that here, too, the angle is acute, if, instead of the mean direction of the wind observed at Hamilton, we employ that at Ireland Isle, another island in the same group, or even the mean between the two.

WINDS OF THE GLOBE.

SERIES A. ALPHABETICAL LIST OF STATIONS.

THE following list will serve as an *index* for finding where the results of the material from any given station are incorporated into the work, by turning to the number of its zone as given in the running title at the top of each right-hand page, and following the serial numbers down till the one belonging to that station is reached. For example, if it be required to find the results of the observations made at Jerusalem, turn to zone No. 12, and follow its serial numbers down to 179.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Aalesund	Norway	62° 29′ N.	5° 41′ E.	32	6	24	19
Aarau	Switzerland	47 23 N.	8 5 E.	...	9	183 and 196	12 and 21
Abbeville	France	50 7 N.	1 50 E.	...	8	134 and 138	6
Abbeville	South Carolina	34 11 N.	82 24 W.	...	12	135 and 138	68
Abbitibbe House	Hudson's Bay Terr	48 48 N.	78 30 W.	...	9	61	1
Aberavon	Wales	51 35 N.	3 48 W.	...	8	53	68
Aberdeen	Scotland	57 9 N.	2 8 W.	110	7	39	7
Aberdour	Scotland	56 29 N.	3 28 W.	60	7	43	7
Abiquiu	New Mexico	36 5 N.	106 40 W.	...	11	43	2
Abo	Russia	60 27 N.	22 10 E.	...	6	44 and 45	4
Abou Egli	Nubia	18 44 N.	33 36 E.	...	15	30	70
Abqoulgui	Abyssinia	10 30 N.	34 41 E.	...	16	26	70
Acquidneset	Rhode Island	41 36 N.	71 32 W.	...	10	288 and 289	9 and 1
Adams	New York	43 52 N.	75 50 W.	632	10	209	1 and 9
Addison	Maine	44 31 N.	67 34 W.	...	10	314	9
Adelaide	Australia	34 57 S.	138 38 E.	140	25	69	55 and 14
Adelsberg	Illyria	45 46 N.	14 12 E.	...	9	322 and 323	22
Aden	Arabia	12 46 N.	45 5 E.	199	16	29	17
Adouah	Abyssinia	14 11 N.	38 55 E.	...	16	27	35 and 87
Affoltern	Switzerland	47 6 N.	7 20 E.	...	9	190 and 196	12
Afton	Minnesota	40 50 N.	93 0 W.	...	10	77	1
Agra	India	27 10 N.	78 5 E.	551	13	81 and 86	14 and 23
Agricultural College	Maryland	38¾ N.	76¾ W.	...	11	138	1
Ahun	France	46 5 N.	2 2 E.	1471	9	114	11
Aiken	South Carolina	33 32 N.	81 34 W.	565	12	140 and 141	1
Ailate	Abyssinia	15 29 N.	39 13 E.	...	15	31	35
Airolo	Switzerland	46 31 N.	8 35 E.	...	9	235 and 237	12
Ajan	Siberia	56 27 N.	138 26 E.	...	7	136	14
Ajmere	India	26 20 N.	74 47 E.	...	13	78 & 78 (*a*)	23
Akmollinsk	Siberia	51 0 N.	80 E.	...	8	240 (*b*)	144
Akyab	India	20 8 N.	92 57 E.	...	14	39	17
Alachua County[1]	Florida	29 35 N.	82 26 W.	184	13	41 and 42	1
Alagyr	Russia	43 0 N.	44 8 E.	2060	10	394	20 and 65
Aland Island	Russia	60 15 N.	19 50 E.	...	6	37	4
Albacete	Spain	39 0 N.	1 55 W.	...	11	192 and 196	29
Albany	Illinois	41 40 N.	90 16 W.	...	10	104	1
Albany	New York	42 39 N.	73 44 W.	130	10	219 and 227	3
Albany	Oregon	44 22 N.	123 0 W.	...	10	28	1
Albion	Illinois	38 33 N.	88 12 W.	...	11	92 and 93	1
Albion	New York	43 15 N.	78 21 W.	...	10	160	1
Albion Mines	Nova Scotia	45 34 N.	62 42 W.	128	9	85	1 and 68
Albuquerque	New Mexico	35 6 N.	106 38 W.	5032	11	45 and 46	2
Alcatraz Island	California	37 50 N.	122 24 W.	...	11	26	2
Alderly Rectory	England	?	?	...	9	85 and 94	30
Aldershot Camp	England	51 15 N.	1 W.	325	8	106 and 118	13
Aleppo	Syria	36 11 N.	37 9 E.	...	11	212	91
Alexandria	Egypt	31 12 N.	29 53 E.	50	12	174	14, 35, and 87

[1] Gainesville.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Alexandria............	Tennessee............	36° 10′ N.	86° 9′ W.	...	11	104	1
Alexandra	Virginia..............	38 48 N.	77 1 W.	56	11	125 and 126	1
Alexandropol.........	Russia	40 47 N.	43 35 E.	5010	10	391	14, 20, and 65
Alexandrovskaya ... (Stanitza)	Russia	44 43 N.	42 33 E.	...	10	390	4
Algiers	Algeria................	36 52 N.	3 2 E.	66	11	201½	21 and 33
Algona................	Iowa	43 1 N.	94 4 W.	...	10	80	1
Alicante	Spain	38 21 N.	0 32 W.	92	11	194 and 196	29
Allahabad	India	25 25 N.	81 51 E.	...	13	93 (c)	23
Alleghany Arsenal..	Pennsylvania	40 26 N.	80 2 W.	...	10	139 and 144	2 and 1
Alleghany City	Pennsylvania	40 30 N.	80 0 W.	...	10	144	1
Alleghany Tunnel...	Pennsylvania	40 30 N.	78 36 W.	...	10	167	
Allenheads	England	54 49 N.	....	1360	8	61 and 66	13
Allenton	Missouri	38 29 N.	90 45 W.	...	11	87	1
Alligator	Florida	30 12 N.	82 37 W.	174	12	133 and 134	1
All Saints.............	South Carolina	33 40 N.	79 17 W.	20	12	140 and 141	1
Allstedt................	Germany	51 26 N.	11 20 E.	...	8	182	40
Alnoma	Indiana................	38 45 N.	85 33 W.	...	11	101	1
Alost	Belgium	50 55 N.	4 5 E.	...	8	140 and 143	68
Altdorf	Switzerland..........	46 53 N.	8 35 E.	...	9	221 and 237	12
Althofen...............	Hungary	47 37 N.	19 1 E.	...	9	344 and 345	22
Altoona	Pennsylvania........	40 37 N.	78 22 W.	1168	10	167	1
Altstatten	Switzerland..........	47 23 N.	9 35 E	...	9	256 and 273	12
Amboina..............	Spice Island..........	3 46 S.	127 59 E.	...	19	48	21
Amenia................	New York............	41 52 N.	73 36 W.	540	10	241 and 243	3
Ames...................	Iowa....................	42 00 N.	93 30 W.	...	10	80	1
Amjinsk...............	Siberia	61 00 N.	132 0 E.	...	6	66	69
Amherst	Massachusetts	42 22 N.	72 34 W.	267	10	258 and 260	1 and 5
Amritsar	India	31 40 N.	70 56 E.	...	12	184(a)&184(c)	142
Amsterdam	Holland	52 25 N.	4 55 E.	50	8	153 and 160	21, 33, and 41
Anadyr River .... (mouth of)	Siberia................	64 30 N.	178 0 E.	...	6	71	67
Anadyrsk	Siberia.................	65 30 N.	168 4 E.	...	5	26	67
Anchorage Plain....	Louisiana............	32 30 N.	93 45 W.	240	12	85	1
Ancud (Gulf of)....	Chili....................	41 51 S.	74 0 W.	...	27	17 (b)	137
Andalusia.............	Illinois	41 30 N.	90 45 W.	...	10	104	1
Andenes	Norway	69 19 N.	16 8 E.	...	5	17	14
Andermatt	Switzerland..........	46 38 N.	8 35 E.	...	9	222	12
Andover	Massachusetts.......	42 39 N.	71 8 W.	...	10	296	1
Andrews...............	Ohio	4 45 N.	80 45 W.	...	10	129	1
Andvoirlich	Scotland	56 10 N.	4 40 W.	...	7	31	7
Angel Island	California	37 55 N.	122 30 W.	30	11	26	2
Angelica..............	New York............	42 15 N.	78 1 W.	1500	10	159 and 160	1
Angers	France	47 28 N.	0 34 W.	...	9	104 and 105	6
Angolola..............	Abyssinia	9 36 N.	39 27 E.	...	17	34	35
Angra	Azores.................	38 38 N.	27 15 W.	...	11	174 (a)	137
Aniva Bay...........	....	46 30 N.	143 0 E.	...	9	374 (a)	126
Annapolis.............	Maryland.............	38 59 N.	76 30 W.	20	11	138 and 137	1
Ann Arbor............	Michigan.............	42 16 N.	83 44 W.	891	10	122 and 123	1
Anspach...............	Bavaria................	49 18 N.	10 34 E.	...	9	290 and 297	68
Antalo..................	Abyssinia	13 10 N.	40 35 E.	...	16	28	35
Apalachicola	Florida.................	29 47 N.	85 5 W.	...	13	33 and 42	1 and 9
Apenrade	Denmark	54 59 N.	9 24 E.	...	8	179 and 180	68 and 74
Appleton..............	Wisconsin	44 10 N.	88 35 W.	800	10	96 and 97	1
Aralikh	Asia Minor...........	39 53 N.	44 26 E.	26	11	217	65 and 20
Aralskoe, or Raimsk	Central Asia..........	46 4 N.	61 47 E.	...	9	369	20 and 4
Aransas Bay.........	Texas..................	27 47 N.	97 08 W.	...	13	20	15
Ararat..................	Australia..............	37 18 S.	142 58 E.	1072	26	85	18
Arbroath	Scotland..............	56 33 N.	2 36 W.	71	7	43	7
Arbresle	France	45 48 N.	4 26 E.	...	9	130 and 138	11
Arcadia	Kentucky	37 37 N.	84 40 W.	...	11	107	1
Archangel............	Russia..................	64 34 N.	38 59 E.	...	6	63	4 and 68
Arcola.................	Ohio	41 55 N.	81 6 W.	650	10	128 and 129	1
Argyle.................	New York............	73 45 N.	43 15 W.	...	10	227	1
Arkadelphia	Arkansas..............	34 8 N.	92 58 W.	...	12	81	1
Armagh	Ireland................	54 21 N.	6 39 W.	210	8	30 and 33	25
Armstrong	Pennsylvania........	40 40 N.	79 17 W.	...	10	114	9
Armstrong Academy	Indian Territory	33 50 N.	95 55 W.	...	12	77 and 75	1
Arendale..............	Alabama	34 56 N.	86 1 W.	...	12	107 and 109	1 and 9
Arzew	Algeria.................	35 52 N.	2 38 W.	...	11	198	6
Ascension Island....	South Atlantic Ocean	8 8 S.	14 28 W.	...	20	26	14 and 34
Aschersleben.........	Germany	51 45 N.	11 27 E.	...	8	181 and 190	68
Ashland	Virginia...............	38 28 N.	81 57 W.	...	11	116 and 117	1

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Ashland	Wisconsin	46° 33′ N.	91° 0′ W.	...	9	52 and 53	1
Ashtabula	Ohio	41 55 N.	80 50 W.	...	10	129	9
Askersund	Sweden	58 53 N.	14 54 E.	...	7	74 and 76	10
Aspinwall	Central America	9 29 N.	79 54 W.	...	17	15 and 18	1
Assen	Holland	52 59 N.	6 30 E.	...	8	158, 160	21, 39, 41, & 43
Assistance Harbor	British America	70 40 N.	94 16 W.	...	4	6	105
Assouan	Egypt	24 5 N.	32 55 E.	...	14	29	70
Assour	Nubia	16 57 N.	33 54 E.	...	15	30	70
Assumption	Paraguay	25 16 S.	57 45 W.	...	24	23	1
Astoria	Oregon	46 11 N.	123 48 W.	...	9	25 and 28	32, 71, & 73
Astrabad	Persia	36 52 N.	53 49 E.	...	11	221	14
Astrachan	Russia	46 21 N.	48 5 E.	40	9	366	4, 10, 20, 36,
Atalissa	Iowa	41 32 N.	91 12 W.	...	10	91	1 [& 65
Atchison	Kansas	39 42 N.	95 0 W.	...	11	71	1
Athens	Georgia	33 52 N.	83 31 W.	850	12	123, 127, & 128	1 and 5
Athens	Greece	37 58 N.	23 44 E.	...	11	208 (*a*)	137
Athens	Illinois	39 52 N.	89 56 E.	...	11	90 and 91	1
Athens	Missouri	40 28 N.	91 45 W.	...	10	83	1
Athens	Ohio	39 26 N.	82 5 W.	...	11	115	1
Athy	Ireland	53 0 N.	6 58 W.	...	8	37 and 39	25
Atlanta	Georgia	33 43 N.	84 18 W.	1050	12	128	1
Atsala	Abyssinia	12 48 N.	40 36 E.	...	16	28	35
Atsena	Florida	29 8 N.	83 3 W.	17	13	41 and 42	1
Attakepas	Louisiana	29 49 N.	91 35 W.	...	13	29 and 33	9
Attawa Hill	North Carolina	35 25 N.	80 0 W.	...	11	124	1
Auburn	Alabama	32 37 N.	85 36 W.	821	12	114 and 115	1
Auburn	California	38 54 N.	121 2 W.	1176	11	19	1
Auburn	New York	42 55 N.	76 28 W.	650	10	171 and 187	3
Auburn	Oregon	44 45 N.	118 16 W.	...	10	33	1
Auchendrane House	Scotland	55 27 N.	4 37 W.	97	7	33	7
Auen	Switzerland	46 54 N.	9 5 E.	...	9	230 and 237	12
Augusta	Georgia	33 28 N.	81 54 W.	152	12	124 and 128	1 and 31
Augusta	Illinois	40 12 N.	90 45 W.	203	10	101 and 102	1
Augusta	Missouri	38 36 N.	90 30 W.	780	11	87	1
Augusta Arsenal	Georgia	33 28 N.	81 53 W.	...	12	125, 126, & 128	2
Aukland	New Zealand	36 50 S.	174 50 E.	140	26	90 and 90 (*a*)	55 and 137
Aukland Island	South Pacific Ocean	50 48 S.	166 42 E.	10	8	56	108
Aurora	Illinois	41 46 N.	88 17 W.	...	10	106 and 107	1
Aurora	Indiana	39 4 N.	84 57 W.	...	11	101	1
Austin	Tennessee	36 20 N.	86 20 W.	...	11	104	1
Austin	Texas	30 20 N.	97 46 W.	650	12	61 and 62	1
Austin Barracks	Texas	30 20 N.	97 46 W.	...	12	60	2
Austinburg	Ohio	41 54 N.	80 52 W.	...	10	129	1
Avandus	Russia	59 3 N.	25 59 E.	...	7	100	16
Avon	Kansas	38 08 N.	95 35 W.	...	11	72	1
Avon	Ohio	41 26 N.	82 5 W.	...	10	129	1
Avondell	Pennsylvania	40 27 N.	77 23 W.	...	10	167	1
Azof (Sea of)	Russia	45 47 N.	35 38 E.	...	9	362	34
Aztalan	Wisconsin	43 4 N.	88 46 W.	...	10	100	1
Bache Aktolik	Siberia	61 30 N.	91 0 E.	...	6	65	69 (?)
Badajos	Spain	38 54 N.	6 46 E.	226	11	184	29
Bagdad	Turkey in Asia	33 20 N.	44 46 E.	...	12	183	48 (?)
Bagneres-de-Bigorre	France	43 3 N.	0 7 E.	...	10	360 and 362	7
Bahmdun	Syria	33 46 N.	35 32 E.	...	12	181	5
Baillieston	Scotland	55 52 N.	4 6 W.	242	7	33	7
Bakou	Russia	40 22 N.	49 38 E.	—53	10	396	20 and 65
Balachna	Russia	56 24 N.	43 41 E.	...	7	115 and 116	16
Balaguer	Spain	41 48 N.	0 45 E.	755	10	54 and 352	29
Balbec	Indiana	40 30 N.	85 0 W.	...	10	114 and 352	1
Baldwin's Institute	Ohio	41 27 N.	82 5 W.	...	10	114	1
Baldwinsville	Massachusetts	42 37 N.	72 5 W.	...	10	260	1
Baldwinsville	New York	43 4 N.	76 41 W.	...	10	186 and 187	1
Balfour	Scotland	56 11 N.	3 5 W.	130	7	43	7
Balaarat	Australia	37 34 S.	143 53 E.	1437	11	74 and 77	18
Ballardsville	Kentucky	38 24 N.	85 31 W.	461	11	106 and 107	1
Ballater	Scotland	57 4 N.	3 3 W.	666	7	39	7
Ballina	Ireland	54 7 N.	9 9 W.	...	8	27 and 33	26
Balloch Castle	Scotland	56 1 N.	4 35 W.	94	7	31	7
Baltimore	Maryland	39 17 N.	76 37 W.	...	11	128 and 131	62
Baltischport	Russia	59 21 N.	24 3 E.	10	7	97	16
Bamberg	Bavaria	49 57 N.	11 0 E.	...	9	294 and 296	21
Banchory	Scotland	57 3 N.	2 31 W.	...	7	39	7
Bancoora	Hindoostan	23 16 N.	87 2 E.	...	14	38	89

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Banff Castle	Scotland	57° 35′ N.	2° 45′ W.	...	7	37	30
Bangor	Iowa	42 0 N.	93 0 W.	...	10	80	1
Bangor	Maine	44 48 N.	68 47 W.	...	10	311	[illegible]
Banjoewangi	Java	8 15 S.	114 28 E.	...	20	44 and 45	21
Banjermassin	Borneo	3 23 S.	114 37 E.	...	19	46	21
Baraboo	Wisconsin	43 29 N.	89 51 W.	...	10	93	1
Barbadoes	West Indies	13 5 N.	59 43 W.	15	16	14 and 15	5, 14, and 60
Barcelona	Spain	41 22 N.	2 6 E.	49	10	353 and 354	29
Bardstown	Kentucky	37 52 N.	85 18 W.	...	11	107	1
Bareilly	India	28 13 N.	79 24 E.	...	13	84, 86, & 84(*a*)	23
Barings Island	Arctic Ocean	73 0 N.	118 0 W.	...	4	2 and 3	117
Barnet	Vermont	44 18 N.	72 5 W.	...	10	253	1
Barnoule	Siberia	53 20 N.	83 27 E.	400	8	242	4, 16, 20, & 36
Barnstable	Massachusetts	41 42 N.	70 10 W.	...	10	303	1
Barnstable	England	51 5 N.	4 5 W.	43	8	95 and 118	13
Barnstead	New Hampshire	43 38 N.	71 27 W.	...	10	276 and 277	1
Barrattsville	South Carolina	34 10 N.	82 2 W.	...	12	138	1
Barry	Scotland	56 31 N.	2 45 W.	38	7	43	7
Basle	Switzerland	47 33 N.	7 35 E.	...	9	180	12
Bassa Cove	Liberia	5 58 N.	10 1 W.	10	17	33	99
Bassora	Turkey in Asia	30 30 N.	47 25 E.	...	12	184	48 (?)
Bastrop	Texas	30 7 N.	97 20 W.	...	12	62	1
Batavia	Illinois	41 48 N.	88 23 W.	636	10	106 and 107	1
Batavia	Java	6 11 S.	106 50 E.	26	20	45 (*a*)	137
Bath	England	51 23 N.	2 21 W.	86	8	99 and 118	13
Bath	Maine	43 55 N.	69 45 W.	...	10	307 and 309	5 and 31
Baton Rouge	Louisiana	30 26 N.	91 18 W.	...	12	88 and 89	2
Battle Creek	Michigan	42 20 N.	85 1 W.	825	10	115 and 116	1
Baurtregaum	Ireland	52 12 N.	9 50 W.	...	8	44 (?)	26
Baxter Springs	Kansas	37 3 N.	94 37 W.	...	11	75 and 76	1
Bay City	Wisconsin	46 18 N.	90 50 W.	658	9	52 and 53	1
Bayfield	Wisconsin	46 43 N.	90 50 W.	...	9	53	1
Bay of Islands.	New Zealand	35 10 S.	174 22 E.	...	26	89	59
Bear Island	Arctic Ocean (near Spitzbergen)	74½ N.	18½ 0 E.	...	4	17	53
Bear Islands.	Arctic Ocean (near coast of Siberia)	70–70½ N.	164 to 168 E	...	4	27	138
Beatenberg	Switzerland	46 41 N.	7 50 E.	...	9	202 and 237	12
Beaufort	North Carolina	34 41 N.	76 40 W.	...	12	148 and 149	2
Beaufort	South Carolina	32 21 N.	80 41 W.	...	12	145	1
Beaujen	France	46 10 N.	4 38 E.	...	9	141 and 148	11
Beaver	Pennsylvania	40 44 N.	80 20 W.	...	10	144	1 and 8
Beaver Bay	Minnesota	47 12 N.	91 19 W.	675	9	51	1
Beaver Brook	New York	41 20 N.	74 50 W.	...	10	242 and 243	1
Bedford	Pennsylvania	40 1 N.	78 30 W.	900	10	164, 166, & 167	1 and 8
Beech Fork	Kentucky	37¾ N.	85 0 W.	...	11	107	1
Beechworth	Australia	....	....	1783	26	82	18
Beirut	Syria	33 50 N.	35 29 E.	...	12	180	17, 38, & 125
Bel Air	Florida	30 25 N.	84 36 W.	70	12	120 and 121	1
Belfast	Maine	44 22 N.	69 6 W.	...	10	311	1
Bedford Hospital	Scotland	57 0 N.	5 0 W.	80	7	39	7
Belle Centre	Ohio	40 30 N.	83 51 W.	1170	10	124 and 125	1
Bellefontaine	Ohio	40 17 N.	83 40 W.	...	10	124 and 125	1
Bellefontaine	Wisconsin	43 48 N.	89 15 W.	...	10	96 and 97	1
Bellefonte	Pennsylvania	40 55 N.	77 49 W.	...	10	167	1 and 8
Belleville	Illinois	38 29 N.	90 6 W.	...	11	91	1
Belleville	New Jersey	40 47 N.	74 8 W.	...	10	248	1
Belleville	New York	43 45 N.	76 10 W.	300	10	176 and 187	1 and 3
Belleville	Iowa	42 50 N.	90 25 W.	...	10	88 and 89	1
Bellevue	Nebraska	41 8 N.	95 50 W.	...	10	67 and 68	1
Bellingzona	Switzerland	46 12 N.	9 5 E.	...	9	246 and 248	12
Bellona Arsenal	Virginia	37 40 N.	77 41 W.	...	11	139 and 143	2
Bell Sound	Spitzbergen	77 30 N.	14 34 E.	10	3	14	37
Bell Port	New York	40 44 N.	72 54 W.	15	10	262 and 273	1
Beloit	Wisconsin	42 30 N.	89 4 W.	750	10	99 and 100	1
Belvidere	Illinois	42 19 N.	88 53 W.	...	10	107	1
Benares	India	25 2 N.	83 5 E.	260	13	94, 97, & 94(*a*)	23
Benbecula	Hebrides Islands	57 27 N.	7 24 W.	...	7	29	7
Bencorr	Ireland	53 30 N.	9 47 W.	...	8	34 and 39	26
Bendersville	Pennsylvania	39 57 N.	77 8 W.	...	11	127	1
Benicia	California	38 3 N.	122 8 W.	64	11	16 and 17	2
Bennington	Vermont	42 52 N.	73 20 W.	...	10	256	9
Benton	Louisiana	32 30 N.	93 45 W.	...	12	85	1

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Bensberg	Prussia	50° 58′ N.	7° 8′ E.	...	8		•
Benton	Missouri	37 8 N.	89 37 W.	...	11	89 and 87	1
Bentonville	Arkansas	36 23 N.	94 10 W.	1790	11	78	1
Berea	Ohio	41 27 N.	82 5 W.	...	10	129	1
Beresov	Siberia	64 0 N.	67 0 E.	...	6	64 (b)	144
Bergen	Norway	60 24 N.	5 20 E.	50	6	29	14
Berlin	Prussia	52 32 N.	13 26 E.	153	8	197	21 and 47
Berne	Georgia	30 50 N.	81 50 W.	...	12	132	1
Berne	Switzerland	46 57 N.	7 24 E.	...	9	201 and 237	12 and 21
Bernharden	Switzerland	46 30 N.	9 5 E.	...	9	231 and 237	12
Bernina	Switzerland	46 27 N.	10 5 E.	...	9	269 and 273	12
Berryville	Virginia	39 9 N.	78 0 W.	575	11	125 and 126	1
Berwick	Pennsylvania	41 5 N.	76 16 W.	588	10	189 and 190	1
Besancon	France	47 13 N.	6 3 E.	...	9	156 and 161	11
Bessested	Iceland	64 4 N.	22 0 E.	...	6	15	68
Bethany	Missouri	40 16 N.	94 2 W.	...	10	83	1
Bethel	Maine	44 18 N.	70 54 W.	...	10	309	1
Bethel	Ohio	39 0 N.	84 0 W.	...	11	109	1
Bethlehem	Pennsylvania	40 33 N.	75 28 W.	..	10	196	1 and 9
Beverly	New York	41 23 N.	74 2 W.	180	10	242 and 243	1
Bevers	Switzerland	46 33 N.	9 50 E.	...	9	264 and 273	12
Bex	Switzerland	46 15 N.	7 5 E.	...	9	238	12 and 21
Bhawulpoor	India	29 26 N.	71 37 E.	...	13	77 (a)	23
Biddeford	Maine	43 29 N.	70 27 W.	...	10	308 and 309	1 and 31
Bilbao	Spain	43 15 N.	2 59 W.	52	10	340 and 343	29
Biloxi	Mississippi	30 27 N.	89 7 W.	...	12	106	1
Biskra	Algeria	34 51 N.	5 40 E.	...	12	172	6
Blackbird Hills	Nebraska	42 10 N.	96 0 W.	...	10	65	1
Black River	Louisiana	31 30 N.	85 46 W.	...	12	86 and 87	1
Black Sea		41 45 N.	35 42 E.	0	10	380 and 881	34
Blackwell's Island	New York	41 14 N.	74 0 W.	29	10	242 and 243	1
Bladensburg	Maryland	38 57 N.	76 58 W.	...	11	137 and 138	1
Blairsville	Pennsylvania	40 28 N.	79 19 W.	...	10	144	1
Block House	Oregon	44 25 N.	123 20 W.	...	10	27 and 28	2
Blois	France	47 35 N.	3 20 E.	...	9	112 and 113	6
Bloomfield	New Jersey	40 49 N.	74 11 W.	120	10	247 and 248	1 and 9
Bloomfield	Wisconsin	42 16 N.	88 30 W.	...	10	93	1
Bloomhill	Scotland	55 8 N.	4 42 W.	...	7	49	7
Bloomingdale	Indiana	39 48 N.	87 0 W.	...	11	99	1
Bloomingdale Asyl.	New York	40 48 N.	74 0 W.	...	10	230 and 243	31
Blooming Grove	Pennsylvania	41 30 N.	95 0 W.	...	10	189 and 190	1
Bloomington	Illinois	40 25 N.	89 0 W.	...	10	109	1
Bloomington	Indiana	39 11 N.	86 30 W.	...	11	99	1
Bloomington	Iowa	41 26 N.	91 2 W.	...	10	90 and 91	1 and 21
Bodenbach	Bohemia	50 47 N.	14 10 E.	...	8	203 and 204	22 and 68
Bogoslowsk	Siberia	59 45 N.	59 59 E.	593	7	127	4, 16, 20, &
Bogota	New Granada	4 35 N.	74 14 W.	8727	18	16	6 [36.
Bokhara	Turkestan	39 52 N.	64 40 E.	...	11	223	5
Boligee	Alabama	32 46 N.	88 10 W.	...	12	115	1
Bolivar	Missouri	37 29 N.	92 45 W.	...	11	81	1
Bologna	Italy	44 30 N.	11 21 E.	244	10	374	14 and 24
Bombay	Hindoostan	18 56 N.	72 53 E.	35	15	35	14 and 140
Bonham	Texas	33 40 N.	96 13 W.	435	12	67	1
Booneville	Missouri	38 55 N.	92 30 W.	...	11	87	1
Boonsboro'	Iowa	42 0 N.	93 14 W.	...	10	80	1
Bon Secour	Alabama	30 18 N.	87 40 W.	...	12	106 [362	1
Bordeaux	France	44 50 N.	0 35 W.	75	10	355, 356, 357 &	6 and 14
Border Plains	Iowa	42 36 N.	94 5 W.	...	10	79 and 80	1
Bossekop	Finmark	69 58 N.	23 24 E.	...	5	19	37
Boston	England	52 59 N.	0 2 W.	20	8	89 and 94	13 and 21
Boston	Georgia	30 48 N.	84 0 W.	...	12	132	1
Boston	Massachusetts	42 22 N.	71 3 W.	...	10	292 and 296	1 and 68
Boston	Texas	33 25 N.	94 40 W.	600	12	67	1
Botzen	Tyrol	46 29 N.	11 20 E.	...	9	313 and 314	22
Bourbonne	France	46 39 N.	3 29 E.	...	9	158 and 161	11
Bourg	France	46 13 N.	5 13 E.	...	9	144 and 148	11
Bournemouth	England	50 40 N.	1 50 W.	125	8	127 and 133	7 and 13
Bowens Prairie	Iowa	42 15 N.	91 10 W.	...	10	89	1
Bowhill	Scotland	55 32 N.	2 55 W.	597	7	49	7
Bowles Creek	Minnesota	44 56 N.	92 52 W.	...	10	77	1
Bowling Green	Kentucky	37 0 N.	86 25 W.	...	11	96 and 97	1
Bowling Green	Ohio	41 15 N.	83 30 W.	...	10	125	1
Bozberg	Switzerland	47 30 N.	8 5 E.	...	9	182 and 196	12

Name of station.	State or country	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix
Brandon	Vermont	43° 45 N.	73° 8′ W.	...	10	255 and 256	1
Brattleboro'	Vermont	42 52 N.	72 26 W.	...	10	256	1
Braunsburg	Prussia	54 22 N.	19 50 E.	...	8	213	68
Breckville	Ohio	41 43 N.	81 40 W.	800	10	129	1
Breda	Holland	51 34 N.	4 47 E.	...	8	146 and 151	121
Bremen	Germany	53 5 N.	8 49 E.	...	8	167 and 173	33
Bremend	Texas	31 9 N.	96 40 W.	...	12	69	1
Breslau	Silesia	51 7 N.	17 3 E.	484	8	211	21
Bressay	Shetland	60 10 N.	1 10 W.	25	6	22	7 and 17
Brest	France	48 24 N.	4 30 W.	220	9	98	6
Brest	Michigan	41 58 N.	83 23 W.	...	10	122 and 123	1
Brestlitowsk	Russia	52 5 N.	23 39 E.	...	8	218 (a)	20
Brewer	Maine	44 45 N.	68 44 W.	...	10	311	9
Bridgewater	Massachusetts	42 0 N.	71 0 W.	150	10	299 and 300	1
Bridgewater	New York	42 55 N.	75 17 W.	1286	10	182 and 187	3
Brienz	Switzerland	46 41 N.	8 5 E.	...	9	203 and 237	12
Brighton	Illinois	39 5 N.	90 15 W.	...	11	90 and 91	1
Brisbane	Australia	27 28 S.	153 6 E.	100	24	54	17
Bristol	England	51 27 N.	2 36 W.	...	8	97 and 118	48 (?)
Brocken	Germany	51 49 N.	10 36 E.	...	8	176	38
Brockville	Illinois	....	....	...	11	93	1
Brockville	Indiana	39 25 N.	84 54 W.	...	11	112 and 114	5
Bronxholm	Scotland	55 27 N.	3 0 W.	...	7	46	68
Brookfield	Connecticut	42 27 N.	73 33 W.	100	10	267	1
Brookfield	Vermont	44 2 N.	72 36 W.	...	10	252	1
Brookhaven	Mississippi	31 30 N.	90 0 W.	...	12	102	1
Brookhaven	New York	40 51 N.	73 0 W.	...	10	273	1
Brooklyn	Michigan	42 6 N.	83 36 W.	...	10	123 and 122	1
Brooklyn	New York	40 42 N.	73 59 W.	...	10	273	9
Brookville	Indiana	39 24 N.	84 55 W.	...	11	101	1 and 9
Brown Cottage	New York	42 30 N.	79 1 W.	...	10	159 and 160	1
Brown University	Rhode Island	41 49 N.	71 25 W.	...	10	284, 285, & 289	97
Brownsville	Arkansas	34 50 N.	92 0 W.	...	12	81	1
Brownville	Nebraska	40 24 N.	95 33 W.	...	10	68	1
Brownsville	Pennsylvania	40 0 N.	79 50 W.	...	11	127	1
Brunn	Moravia	49 11 N.	16 30 E.	697	9	338 and 340	22
Brunswick	Maine	43 53 N.	69 55 W.	...	10	305 and 309	97
Brusio	Switzerland	46 15 N.	10 5 E.	...	9	270 and 273	12
Brussels	Belgium	50 51 N.	4 24 E.	186	8	141 and 143	16, 21, & 44
Bucksfelde	Australia	34 11 S.	138 54 E.	...	25	70	68
Buckhorn	Arkansas	35 50 N.	91 50 W.	650	11	79	1
Bucksport	Maine	44 30 N.	68 53 W.	...	10	311	1
Buda (Ofen)	Hungary	47 30 N.	19 5 E.	420	9	343 and 345	24, 28, & 38
Buenos Ayres	South America	34 35 S.	58 22 W.	60	25	24	14
Buffalo	New York	42 50 N.	78 53 W.	680	10	149, 159, & 160	3
Buffalo[1]	Virginia	....	....	...	...	....	1
Buffalo Barracks	New York	42 53 N.	78 55 W.	...	10	147 and 160	2
Buffalo Springs	Texas	33 30 N.	98 32 W.	1800	12	57	1
Buitenzorg	Java	5 33 S.	106 48 E.	...	20	43 and 45	21
Buncrana	Ireland	55 8 N.	7 27 W.	...	7	22 and 25	25
Burglengenfeld	Germany	49 13 N.	12 3 E.	...	9	303 and 304	68
Burgos	Spain	42 20 N.	3 46 W.	2822	10	339 and 343	29
Burkeville	Texas	31 0 N.	93 34 W.	...	12	70	1
Burlingame	Kansas	38 35 N.	96 45 W.	...	11	69 and 73	1
Burlington	Iowa	40 48 N.	91 12 W.	486	10	91	1
Burlington	Kansas	38 8 N.	95 27 W.	...	11	72	1
Burlington	Minnesota	47 1 N.	91 30 W.	645	9	51	1
Burlington	New Jersey	40 6 N.	75 52 W.	26	10	247 and 248	1 and 9
Burlington	Vermont	44 29 N.	73 11 W.	367	10	249, 251, & 252	1 and 32
Burlington	Wisconsin	42 39 N.	88 4 W.	700	10	100	1
Burning Springs	West Virginia	38 56 N.	81 21 W.	...	11	117	1
Burr Oak	Michigan	41 45 N.	85 30 W.	...	10	116	1
Bush's Station	Siberia	65 17 N.	171 22 E.	...	5	27	77
Bushy Heath	England	51 38 N.	0 1 W.	...	8	114 and 118	27
Bustleton	Pennsylvania	40 5 N.	75 1 W.	...	10	195 and 196	1
Butler	Pennsylvania	40 52 N.	79 56 W.	...	10	141 and 144	5 and 8
Buxton	Maine	43 40 N.	70 27 W.	...	10	309	1
Byberry	Pennsylvania	40 6 N.	74 58 W.	...	10	195 and 196	1
Byfield	Massachusetts	42 45 N.	70 54 W.	...	10	296	1
Cabotville	Massachusetts	42 9 N.	72 37 W.	...	10	260	9
Cadiz	Indiana	39 55 N.	85 20 W.	...	11	101	1
Caesarea	Asia Minor	38 41 N.	35 22 E.	...	11	211	6
Cahawba	Alabama	32 22 N.	87 10 W.	...	12	115	1

[1] See Ashland.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Cahirciven	Ireland	51° 56′ N.	10° 13′ W.	...	8	45 and 48	25
Cairndow	Scotland	56 16 N.	4 56 W.	25	7	31	7
Cairo	Egypt	30 11 N.	31 20 E.	...	12	175 & 175 (*a*)	35, 38, 87, &
Calais	Vermont	44 22 N.	72 9 W.	...	10	252	1 [137
Calcutta	Hindoostan	23 33 N.	88 18 E.	19	14	36 and 37	14 and 49
Caldwell Prairie	Wisconsin	42 48 N.	88 13 W.	...	10	100	1
Caledonia Bay	Isthmus of Darien	8 (?) N.	78 (?) W.	10	17	19	34
Calf of Man	Irish Sea	54 3 N.	4 49 W.	...	8	50	7
Callao	Peru	12 0 S.	77 13 W.	...	21	14	1, 9, and 59
Calton Hill	Scotland	55 56 N.	3 10 W.	...	7	44	68
Calton Mor	Scotland	56 8 N.	5 30 W.	65	7	30	7 and 17
Camanche	Iowa	41 48 N.	90 45 W.	...	10	90 and 91	1
Cambray	France	50 11 N.	3 14 E.	...	8	137 and 138	6
Cambridge	England	52 13 N.	0 9 E.	...	8	89	21
Cambridge	Massachusetts	42 24 N.	71 8 W.	71	10	295 and 296	1, 56, 68, &
Cambridge	New York	43 1 N.	73 23 W.	...	10	224 and 227	3 [95
Cambridge	Ohio	40 5 N.	81 37 W.	...	10	129	9
Camden	Arkansas	33 32 N.	92 48 W.	...	12	82	1
Camden	South Carolina	34 17 N.	80 33 W.	275	12	136, 137, & 138	1
Camden Town	England	51 33 N.	0 7 W.	123	8	110 and 118	13
Camp Anderson[1]	California	38 30 N.	121 28 W.	...	11	17	2
Campbell's Island	Pacific Ocean	52 33 S.	169 9 E.	10	29	56	108
Camp Bidwell	California	41 55 N.	120 15 W.	4680	10	19 and 21	2
Camp Bowie	Arizona	32 10 N.	109 30 W.	...	12	27 and 28	2
Camp Cady	California	34 58 N.	116 35 W.	3000	12	13	2
Camp Cimarron	New Mexico	36 N.	104 0 W.	...	11	50	2
Camp Colorada	Arizona	34 4 N.	114 10 W.	...	12	14 (*a*)	2
Camp Colorada	Texas	31 55 N.	99 17 W.	...	12	54	2
Camp Concordia	Texas	31 46 N.	106 21 W.	3600	12	46	2
Camp Connor	Idaho	42 44 N.	111 45 W.	...	...	....	2
Camp Cooke	Montana	47 48 N.	111 0 W.	...	9	35 and 36	2
Camp Cooper	Texas	33 N.	99 15 W.	...	11	56 (*a*)	2
Camp Crittenden (old Ft. Buchanan)	Arizona	31 43 N.	110 35 W.	...	12	24	2
Camp Date Creek	Arizona	34 45 N.	112 18 W.	3726	12	15 and 20	2
Camp Douglas	Utah	40 39 N.	111 42 W.	4800	10	46 and 48	2
Camp El Dorado	Arizona	35 45 N.	114 50 W.	...	11	32 and 35	2
Camperdown	Australia	?	?	770	26	83	18
Camp Far West	California	39 7 N.	121 18 W.	...	11	13 and 15	2
Camp Floyd	Utah	40 13 N.	112 8 W.	4860	10	48	2
Camp Gaston	California	41 10 N.	123 15 W.	...	10	14 and 16	2
Camp Goodwin	Arizona	32 52 N.	109 51 W.	...	12	25, 26, & 28	2
Camp Halleck	Nevada	40 55 N.	115 57 W.	5600	10	41 and 43	2
Camp Harney	Oregon	43 0 N.	119 0 W.	...	10	34 and 36	2
Camp Hudson	Texas	30 5 N.	101 7 W.	...	12	49	2
Camp Independence	California	36 50 N.	118 11 W.	4800	11	30	2
Camp Lawrence	Louisiana	?	?	...	12	89	2
Camp Lawson	Mississippi	?	?	...	12	106	2
Camp Logan	Oregon	44 9 N.	119 5 W.	5600	10	33	2
Camp McDermit	Nevada	41 58 N.	117 40 W.	4700	10	38 and 40	2
Camp McDowell	Arizona	33 46 N.	111 36 W.	...	12	16 and 20	2
Camp McGarry	Nevada	41 40 N.	119 0 W.	6000	10	37	2
Camp McPherson	Arizona	34 45 N.	112 18 W.	3726	12	15 and 20	2
Camp Moore	Arizona	32 0 N.	111 0 W.	...	12	28	2
Camp Pickett	San Juan Island[2]	48 28 N.	123 1 W.	150	9	16	2
Camp Plummer	New Mexico	36 55 N.	107 0 W.	...	11	41 and 43	2
Camp Quitman	Texas	30 40 N.	105 0 W.	3710	12	45 and 46	2
Camp Rio Mimbres	New Mexico	32 32 N.	107 59 W.	...	12	32	2
Camp Salubrity	Louisiana	31 40 N.	93 15 W.	...	12	84	2
Camp Scott	Utah	41 18 N.	110 32 W.	...	10	50	2
Camp Semiahmoo	Washington Terr.	49 0 N.	122 45 W.	11	9	15 and 16	2
Camp Skull Valley	Arizona	34 45 N.	112 30 W.	5000	12	15 and 20	2
Camp Stamford [Stockton.	California	37 57 N.	121 17 W.	...	11	26	2
Camp Steele	San Juan Island[2]	....	....	...	9	16	2
Camp Stockton	Texas	30 20 N.	102 25 W.	...	12	48	2
Camp Twiggs	Mississippi	?	?	...	12	106	2
Camp Three Forks	Oregon	42 10 N.	116 54 W.	...	10	35 and 36	2
Camp Verde	Arizona	34 2 N.	111 44 W.	...	12	18, 19, & 20	2
Camp Verde	Texas	30 0 N.	99 10 W.	1400	12	56	2
Camp Walbach	Wyoming	41 18 N.	105 15 W.	...	10	58	2
Camp Waller	Arizona	31 31 N.	110 11 W.	...	12	23 and 24	2
Camp Warner	Oregon	42 52 N.	120 0 W.	...	10	30 and 31	2

[1] See Sonoma.

[2] See Washington Territory.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Camp Watson	Oregon	44° 13′ N.	119° 45′ W.	...	10	32 and 33	2
Camp Willow Grove	Arizona	35 34 N.	113 27 W.	...	11	34 and 35	2
Camp Winfield Scott	Nevada	41 34 N.	117 30 W.	...	10	39 and 40	2
Camp Wright	California	39 45 N.	123 8 W.	...	12	11 and 12	2
Canajoharie	New York	42 53 N.	74 35 W.	284	10	227	3
Canandaigua	New York	42 50 N.	77 15 W.	...	10	157 and 160	3
Canary Islands	Atlantic Ocean	28 43 N.	17 46 W.	...	13	71	68
Cannelton	Indiana	37 58 N.	86 40 W.	450	11	98 and 99	1
Canonsburg	Pennsylvania	40 17 N.	80 14 W.	936	10	143 and 144	1, 8, and 9
Cantabria	Spain	42 30 N.	2 9 W.	...	10	341 and 343	8, 9, and 24
Canton	Connecticut	41 51 N.	72 56 W.	...	10	267	1
Canton	Massachusetts	42 9 N.	71 4 W.	90	10	300	1
Canton	Missouri	40 12 N.	91 37 W.	...	10	83	1
Canton	New York	44 38 N.	75 15 W.	304	10	209	1
Cantonment Burgwin.	New Mexico	36 30 N.	105 47 W.	...	11	42 and 43	3
Cantonment Loring.	Idaho	43 4 N.	112 27 W.	...	10	45	3
Cape Charles	Virginia	37 8 N.	75 53 W.	...	11	143	1
Cape Cod	Massachusetts	....	....	...	10	303	68
Cape Disappointm't	Washington	46 17 N.	124 2 W.	30	9	17 and 18	2
Cape Florida	Florida	25 47 N.	79 58 W.	...	13	57 and 58	30
Cape Girardeau	Missouri	37 20 N.	90 36 W.	...	11	88 and 89	1
Cape May	New Jersey	38 52 N.	74 42 W.	...	11	153 and 156	9
Cape Otway	Victoria	38 51 S.	143 35 E.	300	26	76 and 77	18
Cape Palmas	Liberia	4 22 N.	7 32 W.	10	18	25	99
Cape Small Point	Maine	43 43 N.	69 52 W.	...	10	309	1
Cape Town	South Africa	33 55 S.	18 20 E.	...	25	41 and 42	14 and 34
Capon Bridge	Virginia	39 16 N.	78 30 W.	...	11	125 and 126	1
Caraccas	Venezuela	10 30 N.	66 54 W.	2924	16	10, 11, & 12	68
Carbon Cliff	Illinois	41 31 N.	90 29 W.	...	10	104	1
Cardington	England	52 7 N.	0 30 W.	109	8	88 and 94	13
Cardington	Ohio	40 30 N.	83 0 W.	...	10	129	1
Cardross	Scotland	55 58 N.	4 38 W.	80	7	33	7
Cargen	Scotland	55 0 N.	3 37 W.	85	7	49	7
Carlisle	England	54 57 N.	3 0 W.	114	8	58 and 66	13 and 30
Carlisle	Pennsylvania	40 12 N.	77 11 W.	500	10	167	1 and 8
Carlisle Barracks	Pennsylvania	40 12 N.	77 14 W.	...	10	165 and 167	3
Carlowville	Alabama	32 10 N.	87 0 W.	400	12	114 and 115	1
Carlshamn	Sweden	56 10 N.	14 50 E.	10	7	73	10
Carlsruhe	Baden	49 4 N.	8 30 E.	...	9	276 and 279	68
Carlstad	Sweden	59 23 N.	13 26 E.	...	7	71	10
Carmel	Maine	44 47 N.	69 0 W.	175	10	311 and 311½	1
Caroon Point	North Carolina	35 57 N.	75 47 W.	...	11	145	73 (?)
Carpenter	Pennsylvania	41 37 N.	76 53 W.	...	10	190	1
Carrollton	Missouri	39 19 N.	93 27 W.	...	9	80	1
Carson City	Colorado	38 30 N.	105 0 W.	...	11	51	1
Cartagena	New Granada	10 21 N.	75 34 W.	10	16	7	34
Carysford Reef	Florida	25 2 N.	80 15 W.	...	13	58	32
Carthage	Illinois	40 23 N.	91 17 W.	...	10	102	1
Carthage	Indiana	39 40 N.	85 20 W.	...	11	101	1
Cascade Valley	Wisconsin	44 30 N.	92 0 W.	...	10	84, 85, 86, and [87	1
Cass Lake	Minnesota	47 30 N.	94 31 W.	...	9	51	1
Cassville	Missouri	36 41 N.	93 56 W.	3000	11	81	1
Castasegna	Switzerland	46 20 N.	9 35 E.	...	9	266 and 273	12
Castlemaine	Australia	?	?	...	26	81	18
Castle Newe	Scotland	57 12 N.	3 0 W.	68	7	39	7
Castleton	Vermont	43 32 N.	73 9 W.	...	10	255 and 256	1
Castle Toward	Scotland	55 53 N.	4 59 W.	...	7	32	30
Castletownshend	Ireland	51 33 N.	9 9 W.	...	8	46 and 48	25
Catharina Sophia	Guiana	5 48 N.	56 47 W.	...	17	22, 23, & 24	1
Catherinenburg	Siberia	56 50 N.	60 40 E.	997	7	129	4, 16, 20, & [36
Catherinoslav	Russia	48 28 N.	35 5 E.	...	9	358	4
Catiola	Georgia	32 40 N.	84 56 W.	...	12	132	1
Catonsville	Maryland	39 17 N.	76 43 W.	...	11	131	1
Catorce	Mexico	23 42 N.	100 28 W.	...	14	7	15
Cayenne	Guiana	4 56 N.	52 18 W.	7	18	17	14
Cayuga	Kansas	39 25 N.	94 58 W.	...	11	71	1
Cayuga Academy[1]	New York	42 43 N.	76 37 W.	...	10	169 and 187	3
Cazenovia	New York	42 55 N.	75 46 W.	1260	10	179 and 187	3 and 1
Cebolletta	New Mexico	35 15 N.	107 20 W.	...	11	39 and 40	2
Cedar Grove	Texas	29 10 N.	96 56 W.	...	13	27	1
Cedar Keys	Florida	29 8 N.	83 9 W.	17	13	34, 36, & 42	32 (?)

[1] Ledyard.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Celesteville	Kansas	38° 40′ N.	95° 16′ W.	...	11	72	1
Central City	Colorado	39 35 N.	105 10 W.	...	11	51	1
Central Mine	Michigan	47 0 N.	87 54 W.	...	9	57	1
Centralia	Illinois	38 31 N.	89 9 W.	...	11	91	1
Centre Signal Stat'n	Bermuda	....	....	...	12	150 and 151	1 and 78
Centreville	Iowa	40 32 N.	93 4 W.	...	10	82	5
Cercie	France	....	....	...	9	128 and 138	11
Ceres	Iowa	42 45 N.	91 11 W.	...	10	89	1
Ceres	Pennsylvania	42 0 N.	78 25 W.	...	10	162	1
Ceresco	Wisconsin	43 50 N.	88 57 W.	...	10	96 and 97	1
Chacodate	Japan	41 48 N.	140 47 E.	150	10	400	14
Chagres	New Grenada	9 10 N.	80 17 W.	...	17	14 and 18	9
Chalons	France	46 50 N.	4 51 E.	...	9	142 and 148	11
Chambersburg	Pennsylvania	39 56 N.	77 43 W.	618	11	127	1, 8. and 9
Champion	New York	43 55 N.	75 48 W.	...	10	209	68
Chanacillo	Chili	27 28 S.	70 28 W.	...	24	24	1
Channahan	Illinois	41 15 N.	88 16 W.	...	10	107	1
Chapel Hill	North Carolina	35 54 N.	79 17 W.	500	11	121 and 124	1 and 5
Chapel Hill.	Texas	30 15 N.	96 21 W.	...	12	72	1
Charkov	Russia	49 59 N.	36 17 E.	...	9	361	4
Charleston	South Carolina	32 46 N.	79 57 W.	20	12	142 and 145	1
Charleston Arsenal.	South Carolina	32 46 N.	80 0 W.	...	12	145	2
Charlestown	New Hampshire	43 14 N.	72 23 W.	...	10	281	9
Charlestown	Virginia	39 16 N.	77 53 W.	...	11	126	1
Charlotte	Vermont	44 18 N.	73 15 W.	...	10	252	1
Charlottesville	Virginia	38 0 N.	78 27 W.	521	11	119	1
Chatfield	Minnesota	43 50 N.	92 25 W.	325	10	77	1
Chatham	New York	42 26 N.	73 30 W.	...	10	226 and 227	1 and 9
Chattahoochee	Florida	30 48 N.	84 48 W.	180	12	121	1
Chattanooga	Tennessee	35 3 N.	85 26 W.	...	11	104	1
Chaumont	Switzerland	47 1 N.	6 50 E.	...	9	171 and 178	72
Chaux-de-fonds	Switzerland	47 7 N.	6 50 E.	...	9	173 and 178	21 and 135
Chefoo	China	37 31 N.	121 25 E.	...	11	224	17
Chelsea	Massachusetts	42 25 N.	71 0 W.	...	10	296	1
Cheltenham	England	51 55 N.	1 57 W.	...	8	101 and 118	51
Cherbourg	France	49 39 N.	1 38 W.	...	9	100 and 110	6
Cherry Valley	New York	42 48 N.	74 27 W.	1335	10	212 and 227	3
Chestertown	Maryland	39 14 N.	76 2 W.	...	11	130 and 131	1
Cheviot	Ohio	39 7 N.	84 34 W.	...	11	109	1
Chicago	Illinois	41 53 N.	87 41 W.	600	10	106 and 107	1 and 9
Chico	California	39 45 N.	121 45 W.	150	11	15	1
Childsburg	Kentucky	38 4 N.	84 20 W.	...	11	107	1
Chillicothe	Ohio	39 24 N.	82 56 W.	...	11	115	9
China	Mexico	26 5 N.	99 28 W.	...	13	8	15
Chiswick	England	51 29 N.	0 12 W.	...	8	109 and 118	27 and 21
Christiania	Norway	59 53 N.	10 40 E.	74	7	56	19 and 21
Christiansborg	Gold Coast, Africa	5 24 N.	0 10 E.	45	17	32 (*a*)	74
Christiansburg	Virginia	37 5 N.	80 24 W.	...	11	120	1
Christiansoe	Denmark	55 19 N.	15 12 E.	...	7	63 (*d*)	68
Christiansund	Norway	63 7 N.	7 18 E.	65	6	27	19
Christchurch (Lyttleton.)	New Zealand	42 33 S.	172 39 E.	21	27 & 28	79 and 66	14 and 137
Chur	Switzerland	46 51 N.	9 35 E.	...	9	259 and 273	12
Chuckrata	Hindoostan	29 45 N.	77 30 E.	...	13	83, 83(*a*) & 86	23
Churwalden	Switzerland	46 47 N.	9 35 E.	...	9	260 and 273	12
Cincinnati	Ohio	39 6 N.	84 25 W.	540	11	108 and 109	1 and 9
Cinnaminson	New Jersey	40 1 N.	75 3 W.	83	10	248	1
Claremont	New Hampshire	43 29 N.	72 22 W.	535	10	280 and 281	1
Clarinda	Iowa	40 45 N.	95 4 W.	...	10	72	1
Clarkeville	Georgia	34 40 N.	83 26 W.	1632	12	128	1
Clarkeville	Tennessee	36 29 N.	87 13 W.	481	11	103 and 104	1
Clermont. Ferrand	France	45 46 N.	3 5 E.	...	9	120	6
Clermont. Oise	France	49 7 N.	5 7 E.	...	9	123 and 126	6
Cleveland	Ohio	41 35 N.	81 44 W.	665	10	128 and 129	1
Clifton	Canada West	43 2 N.	79 18 W.	...	10	130	1
Clifton	England	51 28 N.	2 36 W.	228	8	98 and 118	13 and 14
Clifton	Michigan	47 23 N.	88 0 W.	...	9	57	1
Clinton	Illinois	40 9 N.	88 58 W.	...	10	109	1
Clinton	Iowa	41 54 N.	90 30 W.	...	10	90 and 91	1
Clinton	Kentucky	36 38 N.	89 8 W.	...	11	97	1
Clinton	Massachusetts	42 25 N.	71 42 W.	...	10	296	1
Clinton	Michigan	42 5 N.	83 59 W.	...	10	123	1
Clinton	New York	43 0 N.	75 20 W.	500	10	186 and 187	1

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Clinton	Texas	29° 5′ N.	97° 24′ W.	...	13	27	1
Clockville	New York	42 54 N.	75 45 W.	...	10	187	1
Closters	Switzerland	46 52 N.	9 50 E.	...	9	262 and 273	12
Clunie Manse	Scotland	56 25 N.	3 36 W.	...	7	41	30
Clyde	New York	43 10 N.	77 10 W.	400	10	160	1
Coalville	Utah	40 40 N.	111 0 W.	...	10	48	1
Cochabamba	Bolivia	17 27 S.	65 46 W.	...	22	15	14
Cochranville	Pennsylvania	39 52 N.	76 0 W.	...	11	127	9
Cockermouth	England	54 39 N.	3 22 W.	148	8	56 and 66	13
Coffeeville	Mississippi	33 56 N.	89 45 W.	...	12	96	1
Coldwater	Michigan	41 55 N.	84 58 W.	...	10	123	1
Colebrook	Connecticut	42 0 N.	73 3 W.	...	10	267	1
College Hill	Ohio	39 19 N.	84 15 W.	800	11	109	1
Collingwood	Ohio	41 49 N.	83 34 W.	...	10	125	1
Colombo	Ceylon	6 56 N.	79 49 E.	...	17	38 and 41	14 and 34
Colonia Tovar	Venezuela	10 26 N.	67 20 W.	6500	16	9 and 12	1
Columbia	Connecticut	41 42 N.	72 19 W.	...	10	266 and 267	1
Columbia	Indiana	41 10 N.	85 30 W.	...	10	114	1
Columbia	Mississippi	31 15 N.	89 55 W.	...	12	102	1
Columbia	South Carolina	33 59 N.	80 48 W.	295	12	140 and 141	1
Columbia College	New York	40 43 N.	74 5 W.	100	10	243	1
Columbus	Mississippi	33 30 N.	88 29 W.	227	12	95 and 96	1
Columbus	Ohio	39 57 N.	83 3 W.	...	11	109	1 and 9
Columbus	Texas	29 43 N.	96 36 W.	198	13	27	1
Como	Mississippi	34 45 N.	90 (?) W.	...	12	94	1
Como	Mexico	?	?	...	13	8	
Concord	New Hampshire	43 12 N.	71 29 W.	400	10	280 and 281	1
Conneaut	Ohio	42 0 N.	80 34 W.	...	10	129	1 and 9
Connellsville	Pennsylvania	40 0 N.	79 36 W.	...	10	127	1
Constantia	New York	43 17 N.	76 5 W.	...	10	187	1
Constantinople	Turkey	41 1 N.	28 58 E.	...	10	379	5 and 6
Constableville	New York	43 30 N.	75 31 W.	...	10	187	1
Cooper	Michigan	42 40 N.	85 31 W.	...	10	115 and 116	1
Cooperstown	New York	42 50 N.	74 54 W.	1200	10	187	1
Copenhagen	Denmark	55 41 N.	12 40 E.	12	7	62 and 63	24 and 17
Copper Falls Mines	Michigan	47 25 N.	88 16 W.	1230	9	56 and 57	1
Cordova	Mexico	18 40 N.	96 50 W.	2820	15	8	1
Corfu	Ionian Isles	39 37 N.	19 55 E.	74	11	206	14
Cork	Ireland	51 24 N.	8 23 W.	25	8	47 and 48	14 and 26
Cornish	Maine	43 40 N.	70 44 W.	784	10	308 and 309	1
Cornishville	Maine	43 40 N.	70 44 W.	...	10	308 and 309	1
Corpus Christi	Texas	27 47 N.	97 27 W.	...	13	23	2
Corrimony	Scotland	57 20 N.	4 30 W.	550	7	39	7
Corunna	Spain	43 22 N.	8 25 W.	115	10	234 and 235	29
Corvallis	Oregon	44 30 N.	123 0 W.	...	10	28	1
Cossier	Egypt	26 8 N.	34 15 E.	...	13	74	35 and 87
Cottbus	Prussia	50 37 N.	8 0 E.	...	8	171 and 173	21
Coshocton	Ohio	40 18 N.	81 53 W.	...	10	129	1
Costa Rica	Central America	....	....	...	17	13	1
Coudersport	Pennsylvania	41 45 N.	78 9 W.	...	10	162	9
Council Bluffs	Nebraska	41 45 N.	96 0 W.	...	10	66 and 68	2
Council City	Kansas	38 42 N.	95 50 W.	...	11	71	1
Council Grove	Kansas	38 42 N.	96 32 W.	...	11	69	1
Courcon	France	46 15 N.	1 0 W.	...	9	110	11 and 6
Courtown	Ireland	52 39 N.	6 13 W.	...	8	43 and 44	25
Covington	Georgia	33 34 N.	84 0 W.	763	12	128	1
Covert	New York	42 40 N.	76 50 W.	1000	10	187	1
Crack Whip	Virginia	39 30 N.	78 31 W.	1750	11	125 and 126	1
Cracow	Poland	50 4 N.	19 30 E.	708	8	214	21 and 22
Craftsbury	Vermont	44 40 N.	72 29 W.	1100	10	251 and 252	1
Crawfordsville	Kansas	37 53 N.	95 25 W.	...	11	76	1
Crescent City	California	41 45 N.	124 11 W.	12	10	16	1
Crichton's Store	Virginia	36 40 N.	77 50 W.	500	11	142 and 143	1
Cronberg	Sweden	56 0 N.	13 23 E.	...	7	67	28
Cronstadt... [burg.)	Russia	59 59 N.	29 46 E.	...	7	89	16 and 20
Cross Creek (Wells-	Virginia	40 19 N.	80 31 W.	...	10	144	1
Cross Roads	Texas	30 27 N.	97 26 E.	672	12	62	1
Croton	Ohio	40 13 N.	82 38 W.	...	10	125	1
Cuba	New York	42 7 N.	74 14 W.	...	10	158 and 160	3
Cublize	France	45 59 N.	4 18 E.	...	9	139 and 148	11
Cuidad-Real	Spain	38 59 N.	4 0 W.	2247	11	191	29
Cuilcagh	Ireland	54 12 N.	7 48 W.	...	8	33	2
Culloden	Georgia	32 51 N.	84 13 W.	...	12	131 and 132	1

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Culloden	Scotland	57° 31′ N.	4° 13′ W.	104	7	28	7 and 17
Cuthbert	Georgia	31 47 N.	84 54 W.	...	12	132	1
Cuxhaven	Hanover	53 53 N.	8 45 E.	...	8	166 and 173	68
Cuyahoga Falls	Ohio	42 N.	81 W.	...	10	129	1
Czaslau	Bohemia	49 53 N.	15 24 E.	...	9	333 and 334	22
Dakhel	Egypt	25 41 N.	28 59 E.	...	13	72	70
Dakota	Iowa	42 40 N.	94 0 W.	...	10	80	1
Dakota City	Nebraska	42 30 N.	96 30 W.	...	10	65	1
Dalhousie	India	32 30 N.	75 30 E.	...	12	186(*e*)&186(*h*)	142
Dalkeith	Scotland	55 54 N.	3 4 W.	190	7	49	7
Dallas	Texas	32 40 N.	96 45 W.	...	12	68	1
Dallasburg	Ohio	39 18 N.	84 6 W.	...	11	109	1
Dalton	Georgia	34 50 N.	85 0 W.	...	12	122	1
Damascus	Syria	33 27 N.	36 25 E.	...	12	182	64
Dansville	New York	42 34 N.	77 46 W.	672	10	160	1
Dantzic	Prussia	54 22 N.	18 31 E.	30	8	212	47
Danville	Kentucky	37 40 N.	84 31 W.	900	11	106 and 107	1 and 9
Danville	Minnesota	?	?	...	10	75	1
Danville	Pennsylvania	40 58 N.	76 39 W.	...	10	195 and 196	1 and 8
Darby	Pennsylvania	39 55 N.	75 17 W.	...	13	....	1
Dartford	Wisconsin	43 30 N.	89 25 W.	...	10	100	1
Dartmouth	Massachusetts	41 31 N.	70 58 W.	...	10	300	9
Dartmouth College[1]	New Hampshire	43 42 N.	72 17 W.	...	10	276 and 277	61
Daugaard	Denmark	55 42 N.	9 47 E.	...	7	59 (*b*)	139
Davenport	Iowa	41 30 N.	90 37 W.	555	10	91	1
Davidson College	North Carolina	35 30 N.	80 14 W.	850	9	124	1
Davos	Switzerland	46 48 N.	9 50 E.	...	9	263 and 273	12
Dayton	Ohio	39 44 N.	84 10 W.	720	11	109	1 and 9
Deaf & Dumb Inst.	New York City	40 43 N.	74 5 W.	79	10	234 and 243	1 and 3
Dealy Island	Arctic Ocean	74 52 N.	108 30 W.	..	4	5	114
Dearbornsville Ars'l	Michigan	42 20 N.	83 1 W.	...	10	120 and 123	2
Dearston House	Scotland	56 13 N.	4 4 W.	130	7	31	7
Debreczin	Hungary	47 32 N.	21 34 E.	417	9	346	14
Decatur	Nebraska	42 0 N.	96 17 W.	...	10	65	1
Decima	Japan	32 44 N.	129 42 E.	26	12	191	14
Deer Creek	Wyoming	42 49 N.	106 0 W.	5000	10	51	1
Deer Lodge City	Montana	46 40 N.	112 40 W.	...	9	33	1
De Helder (see Hel-	Holland	52 57 N.	4 45 E.	...	8	155 and 160	16, 21, 39, 41,
Dehra Doon.....[der	India	30 19 N.	78 6 E.	2229	12	188, 188 (*a*) &	23 [& 43
De Kalb	Illinois	41 55 N.	88 45 W.	...	10	107 [188(*b*)	1
Delafield	Wisconsin	43 10 N.	88 22 W.	900	10	100	1
Delavan	Wisconsin	42 39 N.	88 37 W.	...	10	100	1
Delaware Breakwat'r	Delaware	38 46 N.	75 12 W.	...	11	147 and 148	9
Delaware City	Delaware	39 32 N.	75 35 W.	...	11	147	1
Delgada	Azores	37 44 N.	25 42 W.	...	11	175 (*a*)	137
Delhi	New York	42 16 N.	74 58 W.	1384	10	201 and 227	3
Delphen	England	52 0 N.	0 7 E.	...	8	115 and 118	24
Denainvilliers	France	48 12 N.	3 23 E.	...	9	121	48
Denver City	Colorado	39 35 N.	105 18 W.	...	11	51	1
Depauville	New York	44 15 N.	76 0 W.	...	10	209	1
Dera Ismail Khan	India	32 0 N.	71 5 E.	...	12	184(*b*)&184(*c*)	142
Derbent	Russia	42 4 N.	48 4 E.	—15	10	395	20 and 65
Derby	England	52 58 N.	1 30 W.	174	8	83 and 94	13
De Soto	Nevada	41 30 N.	96 0 W.	...	10	65	1
Dessau	Germany	51 50 N.	12 11 E.	...	8	191	21
Detroit	Michigan	42 24 N.	83 0 W.	620	10	119, 122, & 123	1, 3, and 5
Detroit Barracks	Michigan	42 19 N.	82 58 W.	...	10	121 and 123	2
Devonport	England	50 23 N.	4 9 W.	35	8	122 and 126	68
Deutschbrod	Bohemia	49 36 N.	15 8 E.	...	9	331 and 334	22
Dexter	Maine	44 55 N.	69 20 W.	700	10	311	1
Dijon	France	47 19 N.	5 2 E.	806	9	149, 150, & 161	11, 6, 21 & 24
District of Elnia	Russia	54 34 N.	32 44 E.	...	8	224	4
Divis	Ireland	54 37 N.	6 1 W.	...	8	33	26
Divio[2]							
Dixon	Illinois	41 50 N.	89 36 W.	...	10	102	1
Dixon Springs	Tennessee	36 22 N.	86 1 W.	...	11	104	1
Dizy	Switzerland	46 38 N.	6 35 E.	...	9	169 and 178	12
Djebel Barkal	Nubia	18 31 N.	32 8 E.	...	15	30	70
Dniestrovski Znak.	Russia	46 5 N.	30 29 E.	...	9	352 and 355	20
Doaksville	Indian Territory	34 4 N.	95 26 W.	...	12	77	1
Dodabetta	India	11 32 N.	76 50 E.	8640	16	35	14
Dole	France	47 6 N.	5 29 E.	...	9	154 and 160	11
Dollar	Scotland	56 10 N.	3 39 W.	174	7	43	7

[1] Hanover.

[2] Same as Dijon, which see.

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Dona Ana	New Mexico	32° 22′ N.	106° 46′ W.	...	12	39	2
Donagadee	Ireland	54 38 N.	5 33 W.	...	8	32 and 33	25
Dongola	Illinois	37 26 N.	89 21 W.	...	11	91	1
Dongola	Nubia	18 13 N.	31 7 E.	...	15	....	70
Doulevant-le-Chat'u	France	48 23 N.	4 55 E.	...	9	122	6
Dockyard	Bermuda	32 19 N.	64 51 W.	...	12	151 and 152	1
Dorpat	Russia	58 23 N.	26 44 E.	150	7	88	5, 16, & 21
Douai Light House	Saghalin Harbor	50 50 N.	142 10 E.	...	8	247	
Douglas Castle	Scotland	55 35 N.	3 52 W.	783	7	49	7
Douners Station	Kansas	38 48 N.	99 52 W.	...	11	61 and 64	2
Dover	New Hampshire	43 13 N.	70 54 W.	...	10	279 and 281	31
Dover	New Jersey	40 54 N.	74 35 W.	...	10	248	1
Dover	Tennessee	36 30 N.	87 46 W.	...	11	95	1
Dovre	Norway	62 5 N.	9 7 E.	2110	6	26	19
Downieville	California	39 27 N.	120 25 W.	...	11	15	1
Dresden	Saxony	51 0 N.	13 44 E.	...	8	195	21
Drishaig	Scotland	56 N.	5 30 W.	...	7	31	7
Drum Barracks	California	33 51 N.	118 18 W.	35	12	9, 12	2
Drumlanrig	Scotland	55 17 N.	3 48 W.	192	7	49	7
Drontheim	Norway	63 26 N.	10 23 E.	...	6	28	37
Dubois	Illinois	38 14 N.	89 16 W.	...	11	91	1
Dublin Observatory	Ireland	53 21 N.	6 15 W.	...	8	38 and 39	14 and 25
Dublin, Phœnix Park	Ireland	53 21 N.	6 21 W.	162	8	38 and 39	26
Dublin	New Hampshire	42 45 N.	72 2 W.	...	10	281	1
Dubuque	Iowa	42 29 N.	90 50 W.	666	10	88 and 89	1
Duerne	France	45 44 N.	4 26 E.	...	9	129 and 138	11
Duklum	Hindoostan	18 26 N.	74 41 E.	...	15	36	68
Dum-dum	Hindoostan	22 35 N.	88 13 E.	...	14	35 and 37	49
Dumfries	Scotland	55 3 N.	3 36 W.	180	7	49	7
Dunbarton	New Hampshire	43 12 N.	71 44 W.	...	10	281	1
Dundee	Missouri	38 30 N.	91 10 W.	536	11	87	1
Dundee	Scotland	56 29 N.	2 57 W.	164	7	43	7
Dunedin	New Zealand	45 52 S.	170 31 W.	550	28	65 and 66	14 and 137
Dunmor	Ireland	52 8 N.	6 59 W.	...	8	42 and 44	25
Dunquerque	France	54 2 N.	4 43 E.	...	8	135 and 138	6
Dunrobin	Scotland	57 58 N.	3 59 W.	9	7	39	7
Du Puy	France	45 3 N.	3 53 E.	...	9	127 and 138	6
Dusseldorf	Prussia	51 12 N.	6 40 E.	...	8	161 and 173	24 (?)
Duxbury	Massachusetts	42 3 N.	70 48 W.	...	10	300	1
Dyberry	Pennsylvania	41 36 N.	75 19 W.	...	10	190	1
Eagle River	Michigan	47 20 N.	88 36 W.	...	9	56 and 57	1
Eallabus	Scotland	56 N.	5 20 W.	71	7	31	7
East Bethel	Vermont	43 35 N.	72 36 W.	...	10	256	1
East Bourne	England	50 44 N.	20 0 E.	12	8	132 and 133	13
East Cleveland	Ohio	41 31 N.	81 38 W.	...	10	129	1
East Douglass	Massachusetts	42 3 N.	71 44 W.	...	10	300	1
Rast Fairfield	Ohio	40 41 N.	80 44 W.	1152	10	129	1
East Hampton	New York	41 0 N.	70 19 W.	16	10	271 and 273	3
East Linton	Scotland	55 59 N.	2 39 W.	90	7	49	7
Easton	Missouri	39 46 N.	91 22 W.	...	11	80	1
Easton	Pennsylvania	40 39 N.	75 16 W.	320	10	194, 195 & 196	1, 5, 8 & 9
East Pascagoula	Mississippi	30 20 N.	88 42 W.	...	12	106	2
Eastport	Maine	44 44 N.	67 4 W.	...	10	312 and 314	2
East Smithfield	Pennsylvania	41 56 N.	76 37 W.	1000	10	....	1
East Troy	Wisconsin	42 50 N.	88 30 W.	...	10	100	9
East Wilton	Maine	44 44 N.	70 17 W.	...	10	309	1
East Yell	Shetland Islands	60 34 N.	1 5 W.	...	6	23	7
Eaton	Ohio	39 54 N.	84 25 W.	...	11	109	1
Eaux Bonnes	France	42 59 N.	0 22 W.	...	10	359 and 362	6
Ebensburg	Pennsylvania	40 31 N.	78 45 W.	...	10	163 and 167	8
Eccles	England	53 29 N.	2 30 W.	145	8	69 and 80	13
Eden	New York	42 30 N.	79 7 W.	700	10	159 and 160	1
Edgartown	Massachusetts	41 28 N.	70 28 W.	...	10	303	9
Edgefield	South Carolina	33 45 N.	81 48 W.	...	12	141	1
Edgerton	Ohio	41 32 N.	84 45 W.	831	10	125	1
Edgerton	Wisconsin	42 30 N.	89 0 W.	...	10	100	1
Edgington	Illinois	41 25 N.	90 46 W.	686	10	104	1
Edinburg	Missouri	40 0 N.	93 30 W.	...	10	83	1
Edinburg	Ohio	41 20 N.	81 0 W.	520	10	128 and 129	1
Edinburg	Scotland	55 56 N.	3 10 W.	270	7	49	68
Edinburg, Calton Hill	Scotland	55 57 N.	3 11 W.	...	7	44 and 49	68
Edinburg Castle	Scotland	....	....	270	7	49	7
Edinburg Norm'l Sc.	Scotland	....	....	...	7	49	7

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Edisto Island	South Carolina	32° 34′ N.	80° 18 W.	23	12	144 and 145	1
Effingham	Illinois	39 3 N.	88 5 W.	592	11	93	1
Eh-yoh-hee	Indian Territory	35 N.	97 W.	...	11	67	1
Einsiedeln	Switzerland	47 8 N.	8 50 E.	...	9	224 and 237	72
Ekaterinoslav. See Catherinoslav.	Russia	48 22 N.	35 4 E.	...	9	358	4
Elder's Ridge	Pennsylvania	40 33 N.	79 33 W.	...	10	144	1
El Garah	Egypt	29 36 N.	26 51 E.	...	13	72	70
Elgin	Illinois	42 0 N.	88 20 W.	777	10	107	1
Elgin	Scotland	57 38 N.	3 16 W.	50	7	38	7 and 30
Elizabethton	Tennessee	36 17 N.	82 11 W.	...	11	112	1
Elkhorn	Nebraska	41 22 N.	96 12 W.	1000	10	68	1
Elkrun[1]	Ohio	40 47 N.	80 44 W.	1152	10	129	1
Elkton	Maryland	39 37 N.	75 47 W.	...	11	131	9
Elliott Academy	Mississippi	....	....	500	12	101 and 102	1
Ellisburg (see Bel-	New York	43 45 N.	76 10 W.	300	10	176 and 187	1 and 3
Elmira........[ville)	Illinois	41 12 N.	90 15 W.	...	10	104	1
Elmore	Illinois	40 56 N.	90 4 W.	...	10	102	1
El Paso	Mexico	31 44 N.	106 38 W.	...	12	46	2
El Qasr	Egypt	25 41½ N.	28 58 E.	...	13	72	70
Elwood	New Jersey	39 32 N.	74 48 W.	...	11	153, 154, & 155	1
El Zabon	Egypt	28 22 N.	29 4 E.	...	13	72	70
Embarass	Wisconsin	44 51 N.	88 37 W.	...	10	97	1
Emden	Germany	53 21 N.	7 10 E.	...	8	164 and 173	33 and 38
Emerald Grove	Wisconsin	42 39 N.	88 54 W.	...	10	100	1
Emerson	Missouri	39 56 N.	91 40 W.	...	11	87	1
Emmetsburg	Maryland	39 41 N.	77 20 W.	...	11	131	1 and 9
Engelberg	Switzerland	46 49 N.	8 20 E.	...	9	214 and 237	72
Ephrata	Pennsylvania	40 12 N.	76 15 W.	...	10	196	1
Epping	England	51 42 N.	0 27 E.	...	8	116 and 118	27
Erfurth	Saxony	50 58 N.	11 2 E.	682	8	183	24 (?)
Erie	Alabama	32 45 N.	87 31 W.	...	12	115	1
Erie	Pennsylvania	42 7 N.	80 11 W.	...	10	138	8 and 9
Eriswyl	Switzerland	47 5 N.	7 50 E.	...	9	207 and 237	72
Erzeroom	Armenia	39 57 N.	41 30 E.	...	11	213	124
Eskélund	Denmark	55 29 N.	9 2 E.	...	7	58 (*a*)	139
Eutaw	Alabama	32 46 N.	87 54 W.	...	12	112, 113, & 115	1
Evanston	Illinois	42 0 N.	87 51 W.	18	10	107	1
Evansville	Indiana	38 8 N.	87 29 W.	390	11	98	1
Evergreen	South Carolina	34 30 N.	82 50 W.	...	12	138	1
Exeter	England	50 44 N.	3 33 W.	164	8	124 and 126	21
Exeter	Maine	44 58 N.	68 59 W.	...	10	311	1
Exeter	New Hampshire	52 58 N.	70 55 W.	...	8	280 and 281	1
Eyafiord	Iceland	65 50 N.	20 0 W.	...	5	14	68
Eyemouth	Scotland	55 52 N.	2 5 W.	16	7	49	7
Factory Mills	Georgia	33 40 N.	84 46 W.	...	12	127 and 128	1
Fahlun	Sweden	60 38 N.	15 31 E.	...	6	32	10
Faido	Switzerland	46 29 N.	8 50 E.	...	9	226 and 237	72
Fairfield	Iowa	41 1 N.	91 57 W.	940	10	90 and 91	1
Fairfield	New York	43 5 N.	74 55 W.	1185	10	211 and 227	3
Fair View	Florida	29 45 N.	82 20 W.	...	13	42	1
Falconer	New York	42 5 N.	79 10 W.	...	10	159 and 160	1
Fall River	Massachusetts	41 43 N.	71 10 W.	...	10	300	1
Fallsington	Pennsylvania	40 12 N.	74 48 W.	...	10	196	1
Falmouth	Massachusetts	41 34 N.	70 37 W.	...	10	303	1
Falmouth	Virginia	38 15 N.	77 34 W.	350	11	126	1
Farafeh	Egypt	24 5 N.	32 55 E.	...	14	72	70
Farmer's College[2]	Ohio	39 10 N.	84 25 W.	800	11	109	1
Farmingdale	New York	40 46 N.	73 25 W.	...	10	273	1
Farmington	Missouri	37 48 N.	90 24 W.	...	11	89	1
Farmington	New Hampshire	43 20 N.	71 0 W.	...	10	281	1
Farm Ridge	Illinois	41 13 N.	88 51 W.	...	10	107	1
Faulhorn	Switzerland	46 41 N.	8 0 E.	...	9	234 and 237	72
Fayal	Azores	38 32 N.	28 4 W.	...	11	171 and 174	68
Fayette	Mississippi	31 48 N.	91 12 W.	...	12	102	1
Fayette Village	Iowa	42 50 N.	91 50 W.	1000	10	89	1
Fayetteville	Tennessee	35 10 N.	86 41 W.	...	11	104	1
Fayetteville	Vermont	42 56 N.	72 40 W.	...	10	254 and 256	32
Fayoum	Egypt	29 N.	31 E.	...	13	72	70
Fecamp	France	49 46 N.	0 22 E.	...	9	106 and 109	6
Feddinch	Scotland	56 20 N.	3 W.	...	7	43	7
Fejee Islands	Pacific Ocean	15½–19½ S.	177 E. to 178 W.	...	22	1	59

[1] Same as East Fairfield, which see.

[2] Same as College Hill.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Felix Harbor	Boothia Felix	70° 0′ N.	91° 53′ W.	...	4	7 and 9	103
Fellin	Russia	58 25 N.	25 19 E.	...	7	86	4 and 36
Fernandina	Florida	30 31 N.	81 30 W.	...	12	134	1
Ferrisburgh	Vermont	44 15 N.	73 17 W.	...	10	252	1
Fettevcairon	Scotland	56 53 N.	2 34 W.	247	7	43	7
Fishkill	New York	41 33 N.	73 55 W.	...	10	242 and 243	1
Fishkill Landing	New York	41 33 N.	73 58 W.	42	10	242 and 243	1
Fish River	Alabama	....	....	...	12	106	1
Fitchburg	Massachusetts	42 35 N.	71 50 W.	..	10	296	1
Flatbush	New York	40 37 N.	74 2 W.	54	10	268 and 273	3
Fleming	Pennsylvania	41 0 N.	78 0 W.	780	10	166 and 167	1
Flint	Michigan	42 58 N.	83 39 W.	...	10	122 and 123	1
Florence	Alabama	34 48 N.	87 44 W.	...	12	107 and 109	68
Florence	North Carolina	36 0 N.	80 0 W.	...	11	124	9
Florida	Massachusetts	42 42 N.	73 10 W.	2000	10	259 and 260	1
Flushing	New York	40 46 N.	73 52 W.	...	10	273	1 and 9
Folsom	California	38 30 N.	121 W.	...	11	19	1
Fond-du-Lac	Wisconsin	46 50 N.	92 3 W.	...	11	51	1 and 9
Fontanelle	Iowa	41 28 N.	94 30 W.	...	10	72	1
Fontanelle	Nebraska	41 31 N.	96 45 W.	..	10	68	1
Foordan	Mantchooria	42 25 N.	132 8 E.	...	10	400	71
Fordham	New York	40 54 N.	73 57 W.	147	10	243	1
Forest City	Minnesota	45 45 N.	96 0 W.	...	9	47	1
Forestville	Iowa	42 40 N.	91 50 W.	...	10	89	1
Forestville	Michigan	43 40 N.	82 36 W.	...	10	118	1
Fork Union	Virginia	37 40 N.	78 21 W.	...	11	120	1
Fort Abercrombie	Dakota	46 25 N.	96 43 W.	...	9	40	2
Fort Adams	Rhode Island	41 30 N.	71 19 W.	...	10	283 and 289	2
Fort a-la-Corne	Hudson's Bay Terr.	53 32 N.	104 29 W.	...	8	14	1
Fort Anderson	Hudson's Bay Terr.	68 30 N.	127 30 W.	...	5	4	1
Fort Ann	New York	42 39 N.	73 44 W.	...	10	227	1
Fort Aralskoe (see Aralskoe.)	Turkestan	46 7 N.	61 45 E.	...	9	369 and 373	20 and 4
Fort Arbuckle	Indian Territory	34 36 N.	97 40 W.	1000	12	73	2
Fort Atkinson	Iowa	43 10 N.	92 5 W.	...	10	87½ and 89	2
Fort Atkinson	Kansas	37 47 N.	100 14 W.	...	11	58 and 60	2
Fort Atkinson	Wisconsin	42 55 N.	88 46 W.	...	10	98 and 100	2
Fort Barrancas	Florida	30 18 N.	87 27 W.	...	12	118 and 121	2
Fort Bascom	New Mexico	35 24 N.	103 50 W.	...	11	49 and 50	2
Fort Bayard	New Mexico	32 40 N.	108 25 W.	4450	12	29 and 32	2
Fort Belknap	Texas	33 8 N.	98 48 W.	...	12	57	2
Fort Bellingham	Washington	48 45 N.	122 30 W.	...	9	15 and 16	2
Fort Benton	Idaho	47 49 N.	110 36 W.	...	9	36	2 and 1
Fort Berthold	Dakota	47 32 N.	101 37 W.	...	9	39	2
Fort Bliss	Texas	31 44 N.	106 23 W.	3830	12	44 and 46	2
Fort Boise	Idaho	43 56 N.	116 4 W.	...	10	44	2
Fort Brady	Michigan	46 39 N.	84 43 W.	...	9	63 and 65	2
Fort Bragg	California	39 56 N.	123 55 W.	...	11	10 and 12	2
Fort Bridger	Utah	41 20 N.	110 23 W.	6656	10	49 and 50	2
Fort Brooke	Florida	28 0 N.	82 28 W.	...	13	47, 48 & 50	2
Fort Brown	Texas	25 54 N.	97 26 W.	50	13	24	2
Fort Buchanan	Arizona	31 40 N.	111 35 W.	5330	12	21, 24 & 28	2
Fort Buford	Dakota	48 1 N.	104 0 W.	1900	9	38	2
Fort Capron[1]	Florida	27 30 N.	80 20 W.	...	13	51	2
Fort Cascades	Washington	45 30 N.	121 30 W.	...	9	29 and 31	2
Fort Chadbourne	Texas	31 38 N.	100 40 W.	2120	12	50	2
Fort C. F. Smith	Montana	46 N.	110 W.	...	9	37	2
Fort Chehalis	Washington	46 59 N.	123 50 W.	..	9	18	2
Fort Chippewayan	Hudson's Bay Terr.	58 43 N.	111 18 W.	...	7	13	86
Fort Churchill	Nevada	39 17 N.	119 19 W.	4284	11	31 and 26	2
Fort Clarke	Texas	29 17 N.	100 25 W.	1000	13	9	2
Fort Colville	Washington	48 40 N.	118 4 W.	1963	9	23	2
Fort Conrad	New Mexico	33 34 N.	107 9 W.	...	12	34 and 37	2
Fort Columbus	New York	40 42 N.	74 1 W.	...	10	231 and 243	2
Fort Confidence	Great Bear Lake	66 0 N.	119 0 W.	...	5	6	113
Fort Constitution	New Hampshire	43 4 N.	70 49 W.	...	10	278 and 281	2
Fort Craig	New Mexico	33 26 N.	107 10 W.	4576	12	33 and 37	2
Fort Crawford	Wisconsin	43 5 N.	91 0 W.	...	10	92 and 93	2
Fort Crittenden[2]	Utah	40 13 N.	112 8 W.	4860	10	48	2
Fort Croghan	Iowa	41 29 N.	95 58 W.	...	10	72	2
Fort Croghan	Texas	30 40 N.	98 31 W.	..	12	58	2
Fort Crook	California	41 10 N.	120 20 W.	3390	10	18	2
Fort Dakota	Dakota	43 30 N.	96 45 W.	...	10	62	2

[1] Same as Fort Pierce.

[2] Old Camp Floyd.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Fort Dallas	Florida	25° 55′ N.	80° 26′ W.	...	13	55 and 57	2
Fort Dalles	Oregon	45 36 N.	120 55 W.	350	9	30 and 31	2
Fort Davis	Texas	30 26 N.	103 37 W.	4700	12	47	2
Fort Dearborne	Illinois	41 53 N.	87 41 W.	...	10	105 and 107	2
Fort Defiance	Arizona	35 44 N.	109 15 W.	6500	11	36	2
Fort de-Jerux	France	46 53 N.	6 26 E.	10	9	147 and 148	11
Fort Delaware	Delaware	39 40 N.	75 32 W.	...	11	146 and 147	2
Fort Des Moines	Iowa	41 32 N.	93 38 W.	...	10	81 and 82	2
Fort Deynaud	Florida	26 30 N.	81 30 W.	...	13	53 and 54	2
Fort Dodge	Iowa	42 28 N.	94 3 W.	...	10	78 and 80	1 and 2
Fort Dodge	Kansas	37 30 N.	100 0 W.	...	11	59 and 60	2
Fort Duncan	Texas	28 42 N.	100 28 W.	1460	13	16	2
Fort Edward	New York	43 13 N.	73 42 W.	...	10	226 and 227	1
Fort Ellis	Montana	45 32 N.	111 0 W.	6000	9	37	2
Fort Ellsworth, or [Harker	Kansas	38 44 N.	98 15 W.	...	11	64	2
Fort Enterprise	British America	63 48 N.	113 6 W.	...	6	10	85
Fort Ewell	Texas	28 5 N.	98 57 W.	...	13	17 and 19	2
Fort Fauntleroy	New Mexico	35 29 N.	108 23 W.	...	11	40	2
Fort Fairfield	Maine	46 50 N.	67 59 W.	...	9	79 and 81	2
Fort Fanning	Florida	29 35 N.	83 0 W.	...	13	42	2
Fort Fetterman	Wyoming	42 8 N.	105 37 W.	...	10	55	2
Fort Fillmore	New Mexico	32 13 N.	106 31 W.	3937	12	38 and 39	2
Fort Franklin	Great Bear Lake	65 11 N.	123 7 W.	...	5	5	86
Fort Garland	Colorado	37 32 N.	105 40 W.	8365	11	52 and 54	2
Fort Gates	Texas	31 26 N.	97 49 W.	...	12	63 and 65	2
Fort Gibson	Indian Territory	35 47 N.	95 10 W.	...	11	65 and 67	2 and 1
Fort Graham	Texas	31 56 N.	97 26 W.	...	12	64 and 65	2
Fort Grant, or Breck- [inridge	Arizona	32 54 N.	110 40 W.	...	12	22, 24, 26 & 28	2
Fort Gratiot	Michigan	42 56 N.	82 18 W	...	10	123	2
Fort Hamer	Florida	27 27 N.	82 25 W.	...	13	50	2
Fort Hamilton	New York	40 37 N.	74 2 W.	...	10	269 and 273	2
Fort Hays	Kansas	38 59 N.	99 14 W.	2107	11	62 and 64	2
Forth Mountain	Ireland	52 19 N.	6 34 W.	...	8	44	26
Fort Hope	British America	66 32 N.	86 56 W.	...	5	7	111
Fort Hoskins	Oregon	44 37 N.	123 18 W.	...	10	26 and 28	2
Fort Howard	Wisconsin	44 30 N.	88 5 W.	...	10	94 and 97	2
Fort Humboldt	California	44 46 N.	124 9 W.	50	10	11 and 16	2
Fort Independence	Massachusetts	42 21 N.	71 0 W.	...	10	293 and 296	2
Fort Inge	Texas	29 9 N.	99 9 W.	845	13	11 and 12	2
Fort Jackson	Louisiana	29 27 N.	89 34 W.	...	13	32 and 33	2
Fort Jefferson	Florida	24 38 N.	82 53 W.	...	14	13 and 14	2
Fort Jesup	Louisiana	31 30 N.	93 37 W.	...	12	83 and 84	2
Fort Johnston	North Carolina	34 0 N.	78 5 W.	...	12	147 and 149	2
Fort Jones	California	41 36 N.	122 52 W.	...	10	15 and 16	2
Fort Kearney	Nebraska	40 38 N.	98 57 W.	2360	10	63 and 64	2
Fort Kent	Maine	47 15 N.	68 46 W.	...	9	77 and 81	2
Fort King	Florida	29 12 N.	152 30 W.	...	13	33, 35, 36 & 42	2
Fort Klamath	Oregon	42 40 N.	121 54 W.	4200	10	29 and 31	2
Fort Kodiak	Aleutian Islands	57 55 N.	159 15 W.	...	7	10	2
Fort Lancaster	Texas	30 42 N.	101 25 W.	2350	12	48	2
Fort Lane	Oregon	42 23 N.	122 40 W.	...	10	24 and 25	2
Fort Lapwai	Idaho	46 18 N.	116 54 W.	...	9	32	2
Fort Laramie	Wyoming	42 12 N.	104 48 W.	...	10	54 and 55	1 and 2
Fort Larned	Kansas	38 10 N.	98 57 W.	1932	11	63 and 64	2
Fort Leavenworth	Kansas	39 20 N.	95 11 W.	896	11	70 and 71	2
Fort Lincoln	California	41 55 N.	124 15 W.	...	10	12 and 16	2
Fort Lincoln	Texas	29 22 N.	99 33 W.	...	13	10 and 12	2
Fort Lowell	New Mexico	36 55 N.	107 0 W.	...	11	43	2
Fort Lyon	Colorado	38 8 N.	103 0 W.	4000	11	56 and 57	2
Fort Macon	North Carolina	34 41 N.	76 40 W.	...	12	148 and 149	2
Fort McHenry	Maryland	39 17 N.	76 36 W.	...	11	129, 130 & 131	2
Fort Mackinac	Michigan	45 51 N.	84 33 W.	...	9	62 and 65	2
Fort McIntosh	Texas	27 31 N.	100 17 W.	...	13	21	2
Fort McKavett	Texas	30 55 N.	100 5 W.	...	12	52	2
Fort McPherson	Hudson's Bay Terr.	68 0 N.	135 0 W.	...	5	3	1
Fort McPherson	Nebraska	41 0 N.	100 30 W.	3726	10	3	2
Fort McRae	New Mexico	33 18 N.	107 3 W.	4500	12	25 and 37	2
Fort Madison	Iowa	40 37 N.	91 28 W.	...	10	90 and 91	1
Fort Marcy[1]	New Mexico	....	....	...	...	....	2
Fort Marion	Florida	29 50 N.	81 30 W.	...	13	39, 40 & 42	2
Fort Martin Scott	Texas	30 10 N.	99 5 W.	...	12	56	2

[1] See Santa Fe.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Fort Mason	Texas	30° 48′ N.	99° 15′ W.	1200	12	55	2
Fort Massachusetts.	Colorado	37 32 N.	105 23 W.	...	11	53 and 54	2
Fort Meade	Florida	28 1 N.	82 0 W.	...	13	49 and 50	2
Fort Merrill	Texas	28 17 N.	98 1 W.	...	13	18 and 19	2
Fort Meyers	Florida	26 38 N.	82 0 W.	...	13	52 and 54	2
Fort Mifflin	Pennsylvania	39 57 N.	75 12 W.	...	11	149 and 151	2
Fort Miller	California	37 0 N.	119 40 W.	402	11	26 and 27	2
Fort Mills	South Carolina	35 0 N.	81 7 W.	...	12	138	1
Fort Mojave	Arizona	35 6 N.	114 31 W.	604	11	33 and 35	2
Fort Monroe[1]	Virginia	37 0 N.	76 5 W.	...	11	140, 141 & 143	2
Fort Morgan	Alabama	30 8 N.	88 10 W.	...	12	103 and 106	2 and 73
Fort Morgan	Colorado	40 15 N.	103 46 W.	4500	10	56 and 58	2
Fort Moultrie	South Carolina	32 42 N.	79 56 W.	...	12	143 and 145	2
Fort Niagara	New York	43 18 N.	79 8 W.	...	10	146 and 160	2
Fort Norman	Hudson's Bay Terr..	64 N.	124 W.	...	6	7	1
Fort Number One	Central Asia			170			
Fort Ontario	New York	43 20 N.	76 40 W.	...	10	172 and 187	2
Fort Orford	Oregon	42 44 N.	124 29 W.	...	10	22 and 25	2
Fort Ouralsk	Central Asia	48 33 N.	61 16 E.	...	9	368	20
Fort Perowski	Central Asia	45 20 N.	64 E.	...	9	372 and 373	16
Fort Philip Kearney	Wyoming	44 30 N.	106 50 W.	6000	10	52	2
Fort Pierce	Florida	27 30 N.	80 20 W.	...	13	51	2
Fort Pierre	Nebraska	44 23 N.	100 11 W.	...	10	59 and 60	2 and 1
Fort Pike	Louisiana	30 5 N.	89 54 W.	...	12	90 and 92	2
Fort Polk	Texas	26 6 N.	97 15 W.	...	13	24	2
Fort Point	California	37 49 N.	122 27 W.	27	11	26	2
Fort Porter	New York	42 53 N.	78 55 W.	...	10	160	2
Fort Preble	Maine	43 39 N.	70 20 W.	...	10	306 and 309	2
Fort Prince of Wales	British America	58 47 N.	94 7 W.	...	7	15	95
Fort Quitman	Texas	30 40 N.	105 0 W.	3710	12	45 and 46	2
Fort Rae	British America	60 30 N.	122 5 W.	...	10	9	1
Fort Randall	Dakota	43 1 N.	98 12 W.	1245	10	61 and 62	2
Fort Ransom	Dakota	46 35 N.	97 47 W.	...	9	40	2
Fort Reading	California	40 30 N.	122 5 W.	...	10	17	2
Fort Reliance	Great Slave Lake	62 46 N.	109 1 W.	...	6	11	104
Fort Reynolds	Colorado	38 15 N.	104 12 W.	...	11	55 and 57	2
Fort Rice	Dakota	46 35 N.	100 33 W.	...	9	39	2
Fort Ridgely	Minnesota	44 15 N.	94 45 W.	1230	10	73 and 75	2
Fort Richardson	Texas	33 15 N.	98 1 W.	...	12	59	2
Fort Riley	Kansas	39 3 N.	97 0 W.	1300	11	68 and 69	2 and 1
Fort Ripley	Minnesota	46 19 N.	94 19 W.	1130	9	45 and 47	2
Fort Ruby	Nevada	40 1 N.	115 35 W.	5922	10	42 and 43	2
Fort Sanders	Wyoming	41 13 N.	105 30 W.	7161	10	53 and 55	2
Fort Scott	Kansas	37 45 N.	94 35 W.	...	11	74 and 76	2
Fort Sedgewick	Colorado	41 0 N.	102 25 W.	3600	10	57 and 58	2
Fort Severn	Maryland	38 58 N.	76 27 W.	...	11	135 and 138	2
Fort Shannon	Florida	29 32 N.	81 48 W.	...	13	42	2
Fort Shaw	Montana	47 30 N.	111 42 W.	6000	9	34 and 36	2
Fort Simcoe	Washington	46 14 N.	120 40 W.	...	9	3 and 20	2
Fort Simpson	British America	62 11 N.	121 32 W.	...	6	8	1 and 113
Fort Smith	Arkansas	35 30 N.	94 31 W.	460	11	77 and 78	2
Fort Snelling	Minnesota	44 53 N.	93 8 W.	820	10	76 and 77	2
Fort Socorro	New Mexico	34 10 N.	106 50 W.	...	12	40 and 42	2
Fort Stamford, Stockton	California	37 57 N.	121 17 W.	...	11	26	2
Fort Stanton	New Mexico	33 30 N.	105 38 W.	...	12	36 and 37	2
Fort Steilacoom	Washington	47 10 N.	122 25 W.	300	9	19	2
Fort Stevens	Oregon	46 12 N.	123 57 W.	...	9	24 and 28	2
Fort Stevenson	Dakota	47 30 N.	101 30 W.	...	9	39	2
Fort Sullivan[2]	Maine	44 54 N.	66 58 W.	...	10	312 and 314	2
Fort Sully	Dakota	44 40 N.	100 35 W.	...	10	60	2
Fort Sumner	New Mexico	34 20 N.	104 0 W.	...	12	43	2
Fort Taylor	Florida	24 30 N.	80 41 W.	...	14	9 (*a*) & 14	2
Fort Tejon	California	34 53 N.	118 53 W.	3240	12	7 and 12	2
Fort Ter-Waw	California	41 49 N.	124 12 W.	...	10	13 and 16	2
Fort Terrett	Texas	30 23 N.	100 16 W.	...	12	51	2
Fort Thorn	New Mexico	32 38 N.	107 10 W.	...	12	30 and 32	2
Fort Tongass	Alaska	54 46 N.	130 30 W.	20	8	13	2
Fort Totten	Dakota	47 59 N.	98 54 W.	...	9	39	2
Fort Townshend	Washington	48 5 N.	122 46 W.	135	9	16	2
Fort Towson	Indian Territory	33 58 N.	95 33 W.	...	12	76 and 77	2
Fort Trumbull	Connecticut	41 22 N.	72 5 W.	...	10	264 and 267	2
Fort Umpqua	Oregon	43 42 N.	124 9 W.	8	11	23 and 25	2

[1] Same as Old Point Comfort.

[2] Eastport.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Fort Union[1]	Dakota	48° 1′ N.	104° 0′ W.	1900	9	38	1 and 2
Fort Union	New Mexico	35 54 N.	104 57 W.	6670	11	41 and 42	2
Fort Vancouver	Washington	45 40 N.	122 30 W.	50	9	21	1 and 2
Fort Wadsworth	Dakota	45 43 N.	97 30 W.	1650	9	40	2
Fort Walla-Walla	Oregon	46 3 N.	118 20 W.	...	9	22	2
Fort Washington	Maryland	38 41 N.	71 58 W.	...	11	136 and 138	2
Fort Washita	Indian Territory	34 14 N.	96 38 W.	645	12	74	2
Fort Wayne	Indiana	41 2 N.	85 0 W.	...	10	114	1
Fort Wayne	Indian Territory	36 24 N.	94 38 W.	...	11	66 and 67	2
Fort Webster	New Mexico	32 42 N.	108 0 W.	...	12	31 and 32	2
Fort Whipple	Arizona	32 30 N.	111 W.	5700	12	17, 19 & 20	2
Fort Wilkins	Michigan	47 28 N.	88 0 W.	...	9	54 and 57	2
Fort Wingate	New Mexico	35 10 N.	107 45 W.	...	11	38 and 40	2
Fort Winnebago	Wisconsin	43 35 N.	89 20 W.	...	10	95 and 97	2
Fort Wise	Colorado	38 4 N.	102 45 W.	...	11	56	2
Fort Wolcott	Rhode Island	41 30 N.	71 18 W.	...	10	282 and 289	2
Fort Wood	Louisiana	30 2 N.	89 57 W.	...	12	91 and 92	2
Fort Wood	New York	40 40 N.	74 2 W.	...	10	243	2
Fort Worth	Texas	32 41 N.	97 25 W.	...	12	66	2
Fort Wrangel	Alaska	56 31 N.	132 23 W.	...	7	12	2
Fort Yamhill	Oregon	45 5 N.	123 32 W.	...	9	26 and 28	2
Fort Yuma	California	32 43 N.	114 36 W.	200	12	14	2
Fountain	California	39 N.	105 W.	...	11	51	1
Fountain Dale	Pennsylvania	39 45 N.	77 W.	...	11	127	1
Foxchase	Pennsylvania	40 3 N.	75 10 W.	...	10	196	1
Foxcroft	Maine	45 12 N.	69 13 W.	...	9	76	1
Framingham	Massachusetts	42 18 N.	71 29 W.	...	10	296	1 and 9
Francestown	New Hampshire	43 0 N.	71 46 W.	...	10	280 and 281	1
Franeker	Holland	53 10 N.	5 22 E.	...	8	156 and 160	68
Frankenheim	Germany	51 25 N.	11 5 E.	...	8	188 and 190	40
Franklin	Iowa	42 45 N.	92 11 W.	...	10	88 and 89	1
Franklin	Ohio	39 30 N.	84 15 W.	...	11	109	1
Franklin	Pennsylvania	41 25 N.	79 53 W.	...	10	136 and 138	1 and 8
Franklin	Tennessee	35 42 N.	86 51 W.	...	11	104	1
Franklin Institute	Pennsylvania	39 57 N.	75 10 W.	60	11	150 and 151	8
Franks Island	Louisiana	29 8 N.	89 1 W.	...	13	29	9
Frauenfeld	Switzerland	47 34 N.	8 50 E.	...	9	193 and 196	72
Frederick City	Maryland	39 24 N.	77 18 W.	...	11	130 and 131	1
Fredericksburg	Virginia	38 19 N.	77 31 W.	600	11	126	1
Fredonia	New York	42 26 N.	79 24 W.	709	10	146 and 160	1 and 3
Freedom	Maine	44 30 N.	69 19 W.	...	10	311	1
Freedom	Ohio	41 13 N.	81 8 W.	1100	10	129	1
Freehold	New Jersey	40 15 N.	74 21 W.	...	10	248	1
Freeport	Pennsylvania	40 30 N.	79 41 W.	...	10	143, 144 & 157	1
Freemantle	West Australia	33 5 S.	115 40 E.	...	25	68	14 and 16
Fremont	Ohio	41 20 N.	83 7 W.	...	10	125	1
Fremont Centre	Illinois	42 18 N.	88 6 W.	736	10	106 and 107	1
Fribourg	Switzerland	46 48 N.	7 20 E.	...	9	199 and 237	72 and 21
Friedericthal	Greenland	60 1 N.	44 45 W.	...	6	14	68
Friendship	Tennessee	35 50 N.	89 25 W.	...	11	95	1
Friendship	New York	42 14 N.	78 10 W.	...	10	160	1
Frontera Tabasco	Mexico	18 32 N.	92 40 W.	...	15	12	1
Fryeburg	Maine	44 3 N.	71 0 W.	...	10	308 and 309	1
Funchal	Madeira	32 38 N.	17 6 W.	95	12	164, 165 and 165(a)	27, 30 & 137
Funfkirchen	Hungary	46 4 N.	18 15 E.	...	9	342	22
Futtehgurh	Hindoostan	27 22 N.	79 35 E.	...	13	85, 85(a) & 86	23
Futtehpore	Hindoostan	26 0 N.	80 50 E.	...	13	87 and 94	30
Fyzabad	India	26 45 N.	82 9 E.	...	13	90	23
Gabo Island	Australia	?	?	40	26	86 and 87	18
Gadamis	Africa	30 10 N.	10 28 E.	...	12	172 (a)	58
Gaines	New York	43 17 N.	78 15 W.	422	10	152 and 160	3
Gainesville	Arkansas	36 12 N.	90 35 W.	500	11	79	1
Gainesville	Florida	29 35 N.	82 26 W.	184	13	41 and 42	1
Gainesville	Mississippi	30 30 N.	89 40 W.	...	12	106	1
Galanowsk	Siberia	56 0 N.	61 1 E.	...	7	115	16
Galashiels	Scotland	55 37 N.	2 50 W.	390	7	49	7
Galena	Illinois	42 25 N.	90 33 W.	...	10	104	1
Galesburg	Illinois	40 55 N.	90 25 W.	570	10	102	1
Galesville	Wisconsin	44 06 N.	91 16 W.	...	10	84, 85 & 86	1
Galiko	Finland	60 27 N.	23 0 E.	...	6	46 and 54	
Gallipolis	Ohio	39 0 N.	82 1 W.	520	11	114 and 115	1
Gallop's Island	New York	43 53 N.	76 25 W.	...	10	209	9
Galveston	Texas	29 20 N.	94 45 W.	...	13	26, 27 & 33	1, 9 and 73

[1] Same as Fort Buford.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Gambier	Ohio	40° 21′ N.	82° 20′ W.	1000	10	129	1
Ganges River	India	25 to 26 N.	81 to 85 E.	...	13	87 and 91	30
Gardeia	Algeria	31 57 N.	2 50 E.	...	12	170	6
Gardiner	Kansas	38 47 N.	95 0 W.	...	11	72	1
Gardiner	Maine	44 11 N.	69 46 W.	90	10	308 and 309	1 and 9
Garlandsville	Mississippi	32 23 N.	89 20 W.	...	12	98 and 99	1
Garlick	Michigan	46 49 N.	90 0 W.	...	9	57	1
Garrettsville	Ohio	41 15 N.	81 10 W.	...	10	129	1
Garrison's[1]	New York	41 22 N.	74 02 W.	180	10	242 and 243	1
Geelong	Australia	38 8 S.	144 22 E.	96	26	75 and 77	18
Gefle	Sweden	60 41 N.	17 11 E.	...	6	33 and 35	10
Geneva	New York	42 53 N.	77 2 W.	567	10	160	1
Geneva	Wisconsin	42 30 N.	89 41 W.	...	10	93	1
Geneva	Switzerland	46 12 N.	6 9 E.	1432	9	174, 175 & 178	6, 11, 14, 21, 45
Geneva Hall	Ohio	40 30 N.	83 51 W.	...	10	124 and 125	1 [& 72
Genoa	Italy	44 25 N.	8 58 E.	157	10	371	68
Georgetown	Connecticut	41 15 N.	75 25 W.	300	10	266 and 267	1
Georgetown	District of Columbia	38 55 N.	77 5 W.	...	11	138	1
Georgetown	Guiana	6 49 N.	58 12 W.	...	17	21	9 and 10
Georgetown	Massachusetts	42 42 N.	71 0 W.	...	10	296	1
Georgetown	South Carolina	33 29 N.	79 17 W.	...	12	140 and 141	1
Germantown	New York	42 8 N.	73 58 W.	175	10	227	1
Germantown	Ohio	39 36 N.	84 20 W.	...	11	108 and 109	1
Germantown	Pennsylvania	40 3 N.	75 10 W.	...	10	196	1 and 9
Gettysburg	Pennsylvania	39 51 N.	77 15 W.	624	11	127 and 132	1 and 8
Gersau	Switzerland	46 59 N.	8 35 E.	...	9	220 and 237	72
Geryville	Algeria	32 30 N.	1 to 2 W.	...	12	168	6
Ghadamis See Gadamis.	Africa						
Ghent	Belgium	51 3 N.	3 44 E.	...	8	139 and 143	44
Ghijiga	Siberia	62 10 N.	160 0 E.	...	6	69	5
Gibraltar	Spain	36 6 N.	5 19 W.	46	11	187 and 190	14
Giengen	Bavaria	48 37 N.	10 15 E.	...	9	288 and 297	28
Giengen an der Brienz	Bavaria	48 46 N.	10 34 E.	...	9	292 and 297	28
Gilbert's Trad'g Post	Nebraska	42 28 N.	108 40 W.	...	10	51	1
Gilmer	Texas	32 46 N.	94 48 W.	1017	12	68	1
Gilmore	Ohio	40 18 N.	81 18 W.	1180	10	129	1
Girard College	Pennsylvania	39 58 N.	75 11 W.	...	11	151	1
Girvan	Scotland	55 15 N.	4 50 W.	27	7	33	7
Givors	France	45 32 N.	4 38 E.	10	9	133 and 138	11
Gjerlev	Denmark	56 34 N.	10 8 E.	...	7	59 (*d*)	139
Glarus	Switzerland	47 3 N.	9 5 E.	...	9	227 and 237	72
Glasco	New York	41 50 N.	74 2 W.	...	10	242	1
Glasgow	Scotland	55 53 N.	4 18 W.	180	7	33	7
Glasof	Russia	58 8 N.	52 40 E.	...	7	110 and 111	20
Glencairn	Scotland	55 12 N.	3 52 W.	350	7	49	7
Glendale	Nebraska	40 55 N.	96 5 W.	...	10	68	1
Glenville	Alabama	32 10 N.	85 1 W.	...	12	115	9
Glenwood	Tennessee	36 30 N.	87 17 W.	481	11	103 and 104	1
Gliss	Switzerland	46 17 N.	7 2 E.	...	9	242 and 248	72 and 21
Gloucester	England	51 55 N.	50 16 W.	100	8	100, 118	13
Godthaab	Greenland	65 N.	51 W.	...	5	12	14 and 15
Goersdoff	France	48 57 N.	7 46 E.	...	9	163 and 165	6
Golconda	Illinois	37 41 N.	88 46 W.	...	11	93	1
Golden City	Colorado	39 44 N.	105 8 W.	...	11	51	1
Goldsboro'	North Carolina	35 20 N.	77 51 W.	...	11	144 and 145	1
Goliad	Texas	28 40 N.	97 30 W.	50	13	20	1
Gonzales	Texas	29 28 N.	97 39 W.	...	13	27	1 and 15
Gorbatov	Russia	56 0 N.	43 12 E.	...	7	101 and 103	16
Gordon	Florida	29 45 N.	82 30 W.	...	13	42	1
Gorée, Cape Verde	West Africa	14 40 N.	17 35 W.	...	16	....	6 and 127
Gorki	Russia	54 15 N.	30 55 E.	690	8	222 [97	4 and 14
Goruckpore	Hindoostan	26 46 N.	83 19 E.	...	13	95, 95 (*a*) &	23
Goshen	New York	41 20 N.	74 11 W.	425	10	228 and 243	3
Gosport	England	50 48 N.	1 6 W.	...	8	128 and 133	27
Gosport	Virginia	36 47 N.	78 15 W.	...	11	143	9
Goteborg	Sweden	57 40 N.	12 0 E.	10	7	64	10
Gotha	Germany	50 56 N.	10 44 E.	...	8	177	38
Gottingen	Germany	51 32 N.	9 57 E.	...	8	174	24 (?)
Gouriev	Russia	47 10 N.	52 0 E.	...	9	367	65
Gourneh	Egypt	25 43½ N.	32 38 E.	...	13	74	70
Gouverneur	New York	44 25 N.	75 35 W.	400	10	200 and 209	1 and 3
Gowdysville	South Carolina	34 45 N.	81 30 W.	...	12	138	1

[1] Same as Beverly.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Grachen	Switzerland	46° 12′ N.	7° 50′ E.	...	9	243 and 248	72
Graciosa	Azores	39 12 N.	27 58 E.	...	11	172 and 174	32 (?)
Graetz	Styria	47 4 N.	15 26 W.	...	9	335	22 and 68
Graff Reinett	Cape Colony, Africa	32 10 S.	24 50 E.	2517	25	43 and 45	14
Grafton	Massachusetts	42 12 N.	71 43 W.	...	10	300	1
Grafton	Virginia	39 22 N.	80 1 W.	...	11	117	1
Grafton	Vermont	43 12 N.	72 35 W.	...	10	256	9
Grahamstown	Cape Colony, Africa	33 16 S.	26 30 E.	1750	25	44 and 45	14
Grampian Hills	Pennsylvania	41 N.	78 30 W.	...	10	167	1
Granada	Mississippi	33 45 N.	89 42 W.	...	12	96	1
Granada	Spain	37 11 N.	3 42 W.	2231	11	189 and 190	29
Grand Coteau	Louisiana	30 30 N.	92 W.	...	12	91	68
Grand Haven	Michigan	43 1 N.	86 11 W.	...	10	118	1
Grand Rapids	Michigan	43 0 N.	85 42 W.	752	10	115 and 116	1
Grand Traverse	Michigan	44 56 N.	85 30 W.	...	10	117	1
Grant City	Iowa	42 16 N.	94 58 W.	...	10	70	1
Grantham	England	52 55 N.	0 40 W.	181	8	87 and 94	13
Granville	Illinois	41 14 N.	89 30 W.	...	10	104	1
Granville	New York	43 20 N.	73 17 W.	...	10	225 and 227	3
Granville	Ohio	40 4 N.	82 34 W.	995	10	128 and 129	1 and 9
Granwich	Missouri	39 0 N.	94 40 W.	...	11	80	1
Gray	France	47 27 N.	5 38 E.	10	9	155 and 161	11
Great Falls......[dra	New Hampshire	43 18 N.	70 52 W.	...	10	280 and 281	1
Great Northern Tun-	Siberia	72–73 N.	90–102 E.	...	4	23	69
Great Salt Lake City	Utah	40 50 N.	111 26 W.	4250	10	47 and 48	1
Great Valley	New York	42 12 N.	78 45 W.	...	10	160	1
Green Bay	Wisconsin	44 30 N.	88 5 W.	584	10	97	1
Green Castle	Indiana	39 29 N.	86 46 W.	...	11	98 and 99	1 and 9
Greenfield	Missouri	37 24 N.	93 48 W.	1800	11	81	1
Green Grove	Arkansas	35 10 N.	92 30 W.	...	11	79	1
Green Hill	Pennsylvania	40 48 N.	78 30 W.	...	10	167	9
Green Lake	Wisconsin	43 47 N.	88 55 W.	...	10	97	1
Green Mount	Indiana	39 52 N.	84 59. W.	...	11	101	1
Greenoch	Scotland	55 57 N.	4 45 W.	64	7	33	7
Greensboro'	Alabama	32 30 N.	87 10 W.	...	12	114 and 115	1
Greensboro'	North Carolina	36 5 N.	79 48 W.	...	11	124	1
Greensburg	Indiana	39 20 N.	85 22 W.	...	11	101	9
Green Springs	Alabama	32 50 N.	87 46 W.	500	12	114 and 115	1
Greenville	New York	42 22 N.	74 4 W.	...	10	214 and 227	3
Greenville	Missouri	37 7 N.	90 30 W.	...	11	81 and 89	1
Greenville	Tennessee	36 8 N.	82 46 W.	1350	11	112	1 and 9
Greenville	Texas	33 10 N.	97 22 W.	...	12	67	1
Greenwich	England	51 29 N.	0 0	159	8	112 and 113	13 and 14
Greenwich	New Jersey	39 20 N.	75 25 W.	...	11	153, 154 & 155	1
Greenwood	Dakota	42 52 N.	98 24 W.	1900	10	62	1
Grenada	Mississippi	33 46 N.	89 55 W.	...	12	96	1
Grimsel	Switzerland	46 34 N.	8 20 E.	...	9	215 and 237	72
Grindenwald	Switzerland	46 38 N.	8 5 E.	...	9	210 and 237	72
Groningen	Holland	53 12 N.	6 30 E.	...	8	159 and 160	21, 39, 43 &
Grosnoe	Russia	43 19 N.	45 45 E.	...	10	391 (c)	126 [49
Groton	Connecticut	41 21 N.	72 12 W.	...	10	267	1
Gryazovitz	Russia	58 50 N.	40 57 E.	...	7	97 and 103	4
Guatimala	Guatimala	14 37 N.	90 30 W.	4856	16	6	1
Guernsey	Channel Islands (Great Britain.)	49 28 N.	2 32 W.	204	9	96	13
Guilford Court House	North Carolina	36 1 N.	79 40 W.	...	11	124	9
Guilford Mines	North Carolina	36 N.	80 W.	...	11	124	1
Gulf of Ancud See Ancud.	Chili						
Gunzenhausen	Bavaria	49 6 N.	10 44 E.	...	9	291 and 296	68
Gurdaspur	India	32 0 N.	76 30 E.	...	12	185 (*f*) & 186	142
Gudaur	Russia	42 30 N.	44 30 E.	7071	10	391 (*a*) [(*h*)	126
Guriev	Russia	47 6 N.	51 46 E.	...	9	367	38
Guttenburg	Iowa	43 0 N.	90 50 W.	...	10	89	1
Haarlem	Holland	52 23 N.	4 38 E.	...	8	154 and 160	39 and 43
Haddonfield	New Jersey	39 54 N.	75 8 W.	...	11	153 and 156	1 and 9
Hagerstown	Maryland	39 37 N.	77 38 W.	...	11	131	1
Hakodade	Japan	41 47 N.	140 45 E.	...	10	401	5 and 79
Halifax	England	53 46 N.	1 53 W.	660	8	73 and 80	13
Halifax	Nova Scotia	44 39 N.	63 37 W.	8 & 137	10	318 and 319	34
Halmstad	Sweden	56 45 N.	12 46 E.	...	7	66	10
Hamburg	Germany	53 34 N.	9 55 E.	...	8	169 and 173	21 and 33
Hamilton	Bermudas	32 20 N.	64 45 W.	...	12	150 and 152	34

Name of station.	State or country.	Latitude.	Longitude from Greenwich	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Hamilton	New York	42° 49′ N.	75° 34′ W.	1127	10	180 and 187	3
Hamilton College	New York	43 5 N.	75 6 W.	...	10	187	9
Hamline University[1]	Minnesota	44 34 N.	92 30 W.	...	10	....	1
Hamlinton	Pennsylvania	41 40 N.	75 30 W.	...	10	190	1
Hammerfest	Finmark	70 40 N.	23 46 E.	...	4	18	14, 16 20 & 21
Hampden	Maine	44 42 N.	68 56 W.	...	10	300 and 311	5
Hampton	Connecticut	41 47 N.	72 6 W.	...	10	265	1
Hampshire County.	West Virginia	39 15 N.	79 W.	...	11	....	1
Hanau	Germany	50 8 N.	8 54 E.	...	8	168 and 173	21
Hannibal	Missouri	39 44 N.	91 23 W.	...	11	87	1
Hanover	New Hampshire	43 42 N.	72 17 W.	...	10	276 and 277	61
Haparanda	Sweden	65 54 N.	22 10 E.	10	5	25	10
Hardinsburg	Kentucky	37 45 N.	86 24 W.	500	11	97	1
Harmar	Ohio	39 30 N.	81 25 W.	...	11	115	1
Harper's Ferry	West Virginia	39 19 N.	77 45 W.	...	11	126	1
Harrisburg	Pennsylvania	40 16 N.	76 50 W.	320	10	195 and 196	1 and 8
Harrisburg	Utah	37 N.	118 W.	...	11	37	1
Harris	Hebrides	57 4 N.	6 48 W.	...	7	29	7
Harrisonville	Missouri	38 36 N.	94 17 W.	...	11	80	1
Hartford	Connecticut	41 46 N.	72 47 W.	...	10	267	1
Hartford	Vermont	43 44 N.	72 20 W.	...	10	256	1
Hartwick	New York	42 38 N.	75 1 W.	1100	10	185 and 18	3
Hartwood	Virginia	38 15 N.	73 30 W.	350	11	126	1
Harveysburg	Indiana	39 55 N.	87 40 W.	...	11	99	1
Hastings	Minnesota	44 42 N.	92 50 W.	...	10	77	1
Havana	Alabama	32 50 N.	87 46 W.	500	14	115	1
Havana	Cuba	23 9 N.	82 22 W.	...	12	15 and 17	5 and 134
Havana	New York	42 20 N.	76 54 W.	1041	14	187	1 and 3
Haverford	Pennsylvania	40 0 N.	75 50 W.	...	10	196	1 and 8
Hawarden	England	53 11 N.	2 57 W.	270	8	68 and 80	13
Hawick	Scotland	55 25 N.	2 49 W.	...	7	49	7
Hazle Dell	Illinois	39 N.	88 W.	...	11	93	1
Hazlewood	Minnesota	45 0 N.	95 55 W.	...	9	43 and 44	1
Heard's Island	....	50 20 S.	70 30 E.	...	29	51	96
Heathcote	Australia	....	....	789	26	80 and 87	18
Heathville	Virginia	37 33 N.	76 26 W.	...	11	143	1
Heberville	Utah	37 N.	114 W.	...	11	37	1
Hecla Cove	Spitzbergen	79 55 N.	16 49 E.	...	3	11	106
Hector	New York	42 30 N.	77 0 W.	...	10	187	1
Helena	Arkansas	34 33 N.	90 10 W.	...	12	80 and 81	1
Helena	Texas	29 N.	97 56 W.	600	13	27	1
Helder	Holland	52 57 N.	4 45 E.	...	8	155 and 160	16, 21, 39, 41
Helena City	Montana	46 45 N.	111 50 W.	...	9	33	1 [& 43
Helensburgh	Scotland	56 2 N.	4 40 W.	...	7	31	7
Hellevoetsluis	Holland	51 49 N.	4 9 E.	...	8	145 and 151	21
Helsingfors	Finland	60 10 N.	24 50 E.	50	6	49, 50, 51 & 54	4 and 20
Helston	England	50 7 N.	5 15 W.	160	8	120, 121 & 126	13, 14 & 27
Hematite	Missouri	38 11 N.	90 37 W.	...	11	87	1
Hendholm	Denmark	55 18 N.	11 33 E.	...	7	61 (a)	139
Henlopen Straits	Spitzbergen	79 55 N.	20 E.	10	3	14	53
Henrietta	New York	43 6 N.	77 51 W.	600	10	154 and 160	3
Herbipolis[2]	Bavaria	....	....	...	9	....	24
Heredia	Costa Rica	8 57 N.	83 40 W.	...	17	11 and 13	1
Hermann	Missouri	38 40 N.	91 27 W.	598	11	87	1
Hermanstadt	Transylvania	45 47 N.	24 9 E.	1354	9	347	22
Hermitage	Missouri	37 56 N.	93 16 W.	...	11	81	1
Hermitage	New York	42 9 N.	78 14 W.	...	10	160	1
Hernando	Mississippi	34 48 N.	89 55 W.	70	12	94	1
Hernosund	Sweden	62 35 N.	17 53 E.	10	6	34 and 35	10
Hesper	Iowa	43 30 N.	91 46 W.	...	10	89	1
Hewlett's	Virginia	37 52 N.	77 45 W.	...	11	126	1
Highland.	Illinois	41 15 N.	88 20 W.	...	10	91	1
High Wycombe	England	51 38 N.	0 50 W.	...	8	107 and 118	51
Hill of Howth	Ireland	53 22 N.	6 4 W.	563	8	39	26
Hillsboro'	Georgia	33 13 N.	83 45 W.	566	12	127 and 128	1
Hillsborough	Ohio	39 13 N.	83 30 W.	1134	11	108 and 109	1
Hill Grove	Virginia	37 12 N.	79 30 W.	...	11	120	1
Hilton Head	South Carolina	32 14 N.	80 40 W.	...	12	145	1
Hindholm .... See Hendholm.							
Hinsdale	Massachusetts	42 26 N.	73 8 W.	...	10	260	1
Hiram	Ohio	41 20 N.	81 15 W.	1290	10	128 and 129	1
Hobart Town	Van Diemen's Land	42 52 S.	147 27 E.	37	27	66	55
Hoch Obir	Illyria	46 30 N.	14 7 E.	7016	9	317 and 320	17

[1] Red Wing.

[2] Probably the same as Wurtzburg.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Hockingport	Ohio	39° 0′ N.	81° 30′ W.	...	11	115	1
Hof	Bavaria	50 18 N.	11 55 E.	...	8	189 and 190	28
Hofmansgave	Denmark	55 0 N.	10 0 E.	...	...	61	68
Hogland Light House	Finland	60 6 N.	26 59 E.	...	6	53 and 5	20
Hohenpeissenberg	Tyrol	47 20 N.	10 34 E.	...	9	312	22
Hokitika	New Zealand	42 42 S.	170 59 E.	...	27	83	137
Holkam	England	52 57 N.	2 40 W.	39	8	81 and 94	13
Holland	Michigan	42 42 N.	86 0 W.	...	10	115 and 116	1
Holland	Wisconsin	43 36 N.	87 54 W.	...	10	100	1
Hollidaysburg	Pennsylvania	40 28 N.	78 23 W.	...	10	167	1
Holmia ?	Sweden	63 8 N.	17 23 E.	...	6	35 (*a*)	24
Holton	Kansas	39 27 N.	95 10 W.	...	11	71	1
Holt's Prairie	Illinois	38 1 N.	89 31 W.	...	11	91	1
Homer	New York	42 38 N.	76 11 W.	1100	10	175 and 187	1 and 3
Homer	Ohio	40 15 N.	82 38 W.	...	10	125	1
Homestead	Michigan	44 30 N.	86 0 W.	...	10	118	1
Honcut (Union Ranche)	California	39 25 N.	121 30 W.	...	11	15	1
Honesdale	Pennsylvania	41 36 N.	75 24 W.	...	10	190	8
Hongkong	China	22 16 N.	114 14 E.	35	14	42	14 and 5
Honolulu	Sandwich Islands	21 18 N.	157 55 W.	...	14	2	1, 59 & 68
Horcasitas	Mexico	22 50 N.	97 30 W.	...	14	7	15
Hornersville	Missouri	36 3 N.	90 0 W.	...	11	89	1
Horsham	Pennsylvania	39 59 N.	75 11 W.	...	11	151	1
Horta	Azores	38 30 N.	28 42 W.	80	11	175(*a*) &175(*b*)	1
Horton[1]	Nova Scotia	45 6 N.	64 25 W.	95	9	83 and 84	1
Houghton	Michigan	46 40 N.	88 30 W.	...	9	57	1
Houlton	Maine	46 10 N.	67 50 W.	...	9	80 and 81	2
House of Tongue	Scotland	58 30 N.	4 25 W.	40	7	27	7
Houseville	New York	43 40 N.	75 32 W.	...	10	208 and 209	1
Houston	Texas	29 50 N.	95 30 W.	...	13	27	1
Howell	Michigan	42 36 N.	83 54 W.	...	10	123	1
Hoylton	Illinois	38 30 N.	89 0 W.	...	11	93	1
Hudson	New York	42 15 N.	73 45 W.	150	10	218 and 227	3
Hudson	Ohio	41 15 N.	81 24 W.	1137	10	127 and 129	32
Hull	England	53 45 N.	0 20 W.	12	8	79 and 80	13 and 68
Huesca	Spain	42 7 N.	0 30 W.	1476	10	351 and 354	29
Huntingdon	Pennsylvania	40 31 N.	78 1 W.	...	10	167	1 and 8
Huttonsville	Virginia	38 56 N.	79 45 W.	...	11	117	1
Huntersville	Virginia	39 10 N.	80 1 W.	2640	11	118 and 119	1
Huntsville	Texas	30 41 N.	95 29 W.	...	12	71 and 72	1
Hurds Island	Antarctic Ocean	50 20 S.	70 30 E.	...	29	51	96
Huron	Ohio	41 25 N.	82 40 W.	...	10	128	1
Iberia	Ohio	40 46 N.	82 51 W.	1160	10	129	1
Ichak	Russia	55 58 N.	47 5 E.	...	7	106	16 and 20
Ichim	Siberia	56 6 N.	69 27 E.	...	7	119	16 and 20
Ichtratzheim	France	48 26 N.	7 40 E.	...	9	164 and 165	6
Igloolik	British America	69 21 N.	81 42 W.	...	5	8	101
Ikogmut	Alaska	61 47 N.	161 14 W.	...	6	5	16
Ilanz	Switzerland	46 47 N.	9 20 E.	...	9	252 and 273	72
Ilion	New York	43 1 N.	75 14 W.	...	10	187	1
Ilmenau	Saxe Weimar	50 43 N.	10 55 E.	...	8	186 and 190	40
Ilmola	Finland	62 44 N.	22 29 E.	...	6	41 and 42	4
Iluluk	Aleutian Islands	53 0 N.	167 46 W.	...	8	2	68 and 73
Inchkeith	Scotland	56 3 N.	3 9 W.	...	7	42	68
Independence	Iowa	42 25 N.	92 6 W.	...	10	89	1
Independence[2]	Louisiana	30 30 N.	90 33 W.	50	12	89	1
Indiana	Pennsylvania	40 40 N.	79 10 W.	...	10	144	1 and 8
Indianapolis	Indiana	39 48 N.	86 10 W.	...	11	101	1
Indian Key	Florida	24 54 N.	80 43 W.	...	14	13 and 14	32
Indianola	Texas	28 33 N.	96 30 W.	...	13	20	2
Ingolstadt	Bavaria	48 44 N.	11 15 E.	...	9	298 and 304	24 (?)
Interlaken	Switzerland	46 41 N.	8 5 E.	...	9	209 and 237	72
Inveresk	Scotland	55 56 N.	3 3 W.	90	7	45	7 and 17
Inverury	Scotland	57 17 N.	2 25 W.	30	7	39	7
Ionia	Nebraska	42 20 N.	97 W.	...	10	65	1
Iowa City	Iowa	41 39 N.	91 33 W.	...	10	90 and 91	1
Iowa Falls	Iowa	42 32 N.	93 20 W.	...	10	80	1
Ipswich	Massachusetts	42 41 N.	70 46 W.	...	10	294 and 296	68
Irkutsk	Siberia	52 20 N.	103 50 E.	1253	8	243	4
Ireland Isle	Bermudas	32 20 N.	64 45 W.	...	12	152	68
Isle of Man	Irish Sea	54 8 N.	4 30 W.	...	8	49	27 and 30
Isle of Shoals	New Hampshire	42 58 N.	70 37 W.	...	10	281	1

[1] Same as Wolfville.

[2] Same as Tickfaw.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Ismalia	Egypt	30° 38′ N.	32° 13′ E.	...	12	176 (a)	137
Issny	Wirtemburg	47 42 N.	10 3 E.	...	9	284	28
Isthmus	Maryland	38 45 N.	76 15 W.	...	11	138	1 and 9
Itasca	Minnesota	45 15 N.	93 28 W.	...	9	49	1
Ithaca	New York	42 27 N.	76 30 W.	417	10	170 and 187	3
Ittendorf	Tyrol	?	?	...	9	311 and 314	21
Jackson	Mississippi	32 23 N.	90 8 W.	...	12	98 and 99	1
Jackson	North Carolina	36 25 N.	77 24 W.	...	11	144 and 145	1
Jackson	Ohio	39 7 N.	82 30 W.	666	11	....	1
Jacksonburgh	Ohio	39 30 N.	84 17 W.	1152	...	109	1
Jacksonport	Arkansas	35 36 N.	91 15 W.	...	11	79	1
Jacksonville	Florida	30 30 N.	82 0 W.	14	12	133 and 134	1 and 13
Jacksonville	Illinois	39 48 N.	90 19 W.	...	11	91	1 and 5
Jacobshaven	Greenland	69 10 N.	50 30 W.	10	5	13	14
Jacoutsk (See Yacoutsk.)							
Jaen	Spain	37 47 N.	3 50 W.	...	11	188 and 190	29
Jahnsie	India	25 30 N.	78 34 E.	...	13	81 and 82 (a)	23
Jalapa	Indiana	40 30 N.	85 30 W.	...	10	114	1
Jamaica	New York	40 41 N.	73 56 W.	100	10	270 and 273	3
Jamestown	New York	42 6 N.	79 29 W.	...	10	160	1
Janesville	Wisconsin	42 42 N.	89 9 W.	768	10	99 and 100	1
Janina	Turkey	39 48 N.	21 E.	1570	11	208	7
Jarensk (See Yarensk.)							
Jefferson	Ohio	42 0 N.	81 0 W.	...	10	128 and 129	1
Jefferson	Texas	32 44 N.	94 20 W.	65	12	68	1
Jefferson Barracks	Missouri	38 37 N.	90 16 W.	472	11	83 and 87	2
Jefferson City	Missouri	38 36 N.	92 8 W.	...	11	80	1
Jena	Saxe Weimar	50 56 N.	11 35 E.	...	8	185 and 190	40
Jenisseisk	Siberia	58 20 N.	92 20 E.	...	7	135 (a)	
Jericho	New York	40 48 N.	73 36 W.	...	10	273	1
Jerusalem	Palestine	31 47 N.	35 13 E.	2610	12	179	7 and 122
Jhansie	India	25 40 N.	77 40 E.	...	13		
Jidda	Arabia	21 28 N.	39 13 E.	...	14	31	35 and 87
Jockmock	Sweden	66 35 N.	19 45 E.	...	5	23	10
Johnstown	New York	43 0 N.	74 23 W.	688	10	215 and 227	3
Johnstown	Pennsylvania	40 16 N.	78 56 W.	...	10	167	1
Johnstown	Virginia	37 15 N.	76 W.	...	11	143	1
Joliet	Illinois	41 30 N.	88 10 W.	...	10	107	9
Jonkoping	Sweden	57 43 N.	14 9 E.	292	7	70	10
Julien	Switzerland	46 28 N.	9 50 E.	...	9	265 and 273	72 and 21
Junction City	Kansas	38 57 N.	96 32 W.	...	11	69	1
Kaiserstuhl	Switzerland	47 35 N.	8 35 E.	...	9	189 and 196	72
Kajan	Finland	64 17 N.	27 43 E.	...	6	59	68
Kalaioki	Finland	64 16 N.	24 0 E.	...	6	57	4
Kalamazoo	Michigan	42 20 N.	85 44 W.	...	10	116	1
Kalmar	Sweden	56 37 N.	16 20 E.	10	7	80	10
Kalouga	Russia	54 30 N.	36 17 E.	576	8	225	16 and 20
Kanawha	Virginia	38 53 N.	81 25 W.	720	11	116 and 117	1
Kandotta	Minnesota	45 45 N.	94 55 W.	...	9	47	1
Kanosha	Nebraska	40 51 N.	95 53 W.	1050	10	99 and 100	1
Kara Korum M'nt'ns	Thibet and China	35 50 N.	77 30 E.	...	11	224	119
Karesuando	Finmark	68 36 N.	22 38 E.	...	5	20	37
Kartoom	Nubia	13 37 N.	32 38 E.	...	16	25	70
Kasalinsk (See Fort No. 1.)							
Kaufman	Texas	32 37 N.	96 20 W.	...	12	68	1
Kautokeino	Finmark	69 48 N.	23 20 E.	...	5	20	37
Kazan	Russia	55 57 N.	49 18 E.	...	7	107	68
Keene	New Hampshire	42 23 N.	72 14 W.	...	10	281	9
Keene	Ohio	40 45 N.	81 53 W.	...	10	129	1
Keeper	Ireland	52 36 N.	8 16 W.	...	8	44	26
Kelley's Island	Ohio	41 57 N.	82 43 W.	587	10	123	1
Kem	Russia	64 57 N.	34 39 E.	...	6	61	20
Kenansville	North Carolina	34 57 N.	78 0 W.	...	12	146 and 149	1
Kendal	England	54 18 N.	2 46 W.	...	8	59 and 66	30
Kendallville	Indiana	41 28 N.	85 13 W.	...	10	113	1
Kene	Egypt	26 6 N.	32 53 E.	...	13	128 and 129	35
Kennebec Arsenal	Maine	44 19 N.	69 50 W.	...	10	....	2
Kenogumissie	Hudson's Bay Terr.	49 50 N.	84 W.	...	9	60	1
Kenosha	Wisconsin	42 35 N.	87 50 W.	600	10	68	1
Kentland	Indiana	40 56 N.	87 12 W.	725	10	111	1

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Kenton	Ohio	40° 10′ N.	83° 54′ W.	...	10	125	1
Keokuk	Iowa	40 25 N.	91 21 W.	...	10	90 and 91	1
Kerguelen's Land	Antarctic Ocean	49 50 S.	70 10 E.	...	28	40	96
Kertch (?)	Russia	45 16 N.	36 14 E.	...	9	360	68
Keswick	England	54 40 N.	3 9 W.	...	8	57 and 66	68
Kettins	Scotland	?	?	228	7	43	7
Keytesville	Missouri	39 25 N.	92 53 W.	...	11	80	1
Key West	Florida	24 33 N.	81 48 W.	16	14	149	1 and 32
Key West Barracks	Florida	24 32 N.	81 48 W.	...	14	10 and 14	2
Khargeh	Egypt	25 28½ N.	30 36 E.	...	13	72	70
Kichinev	Russia	47 0 N.	28 43 E.	...	9	35	4
Kiel	Denmark	54 18 N.	10 8 E.	7	8	178 and 180	21
Kiev	Russia	50 26 N.	30 30 E.	578	8	221	4
Kiexisvara	Finmark	67 42 N.	23 35 E.	...	5	20	37
Kilangi	Finmark	67 42 N.	23 47 E.	...	5	20	37
Kilbourne City	Wisconsin	43 30 N.	90 0 W.	...	10	93	1
Kilgou	Abyssinia	11 34 N.	34 14 E.	...	16	26	70
Killough	Ireland	54 13 N.	5 40 W.	...	8	31 and 33	25
Killybegs	Ireland	54 34 N.	8 27 W.	...	8	29 and 33	25
Kilrush	Ireland	52 38 N.	9 30 W.	...	8	40 and 44	25 and 26
Kinderhook	New York	42 18 N.	73 40 W.	125	10	222 and 227	3
Kinfauns Castle	Scotland	56 55 N.	3 30 W.	...	7	40	30
Kingsley Parsonage	England	53 16 N.	2 W.	194	8	71 and 80	13
Kings Mills	Illinois	41 45 N.	88 22 W.	696	10	107	1
Kingston	Canada West	44 8 N.	76 40 W.	294	10	134	1
Kingston	Massachusetts	42 0 N.	70 45 W.	...	10	300	1
Kingston	Mississippi	31 24 N.	91 16 W.	...	12	102	1
Kingston	New York	41 55 N.	74 2 W.	188	10	217 and 227	3
Kingston	Ohio	39 29 N.	83 0 W.	...	11	115	1
Kippune	Ireland	53 10 N.	6 20 W.	...	8	39	26
Kirkpatrick	Scotland	....	....	350	...	....	7
Kirkville	Missouri	40 11 N.	92 33 W.	...	10	83	1
Kirkwall	Orkney Islands	58 58 N.	2 58 W.	10	7	35	7
Kischinev (See Kichinev.)							
Klagenfurth	Illyria	46 32 N.	14 15 E.	1438	9	318	21 and 22
Knightstown	Indiana	39 49 N.	85 27 W.	...	11	101	1
Knockanaffrm	Ireland	52 17 N.	7 35 W.	...	8	44	26
Knox Hill	Florida	30 30 N.	86 1 W.	...	12	120 and 121	1
Knoxville	Alabama	33 2 N.	87 52 W.	...	12	111	9
Knoxville	Tennessee	35 59 N.	83 54 W.	...	11	111 and 112	1 and 9
Kolare	Finmark	67 23 N.	23 51 E.	...	5	20	37
Koniggratz	Austria	50 13 N.	15 48 E.	...	8	206 and 208	22
Konigsberg	Prussia	54 42 N.	20 55 E.	72	8	216	21 and 33
Konigsfelden	Switzerland	47 29 N.	8 20 E.	...	9	185 and 196	72
Koniska [koge.	Minnesota	45 10 N.	94 20 W.	...	9	47	1
Korennoje Filipoos-	Siberia	71 5 N.	118 50 E.	...	4	24	69
Kosmodemiansk	Russia	56 21 N.	46 34 E.	...	7	104	20
Kossuth	Iowa	41 0 N.	91 13 W.	...	10	91	1
Kostroma	Russia	57 45 N.	41 3 E.	640	7	99 and 103	16
Kotgarh	Hindoostan	31 19 N.	77 28 E.	...	12	187	89
Kotzebue Sound	North America	66–68 N.	162–167 W.	...	5	2	110
Kouka	Africa	12 52 N.	13 50 E.	...	16	24 (*b*)	58
Kourgan	Siberia	55 20 N.	65 24 E.	...	7	117	20
Koursk	Russia	51 44 N.	36 14 E.	700	8	227	36 and 4
Koutais	Russia	42 31 N.	42 35 E.	470	10	389	20 and 65
Krasnojarsk	Siberia	56 0 N.	75 16 E.	...	7	135 (*b*)	143
Krasnovodsk	Central Asia	40 N.	70 37 E.	...	10	....	137
Kremsmunster	Austria	48 3 N.	15 6 E.	1258	9	325 and 326	21
Kreuzlingen	Switzerland	47 39 N.	9 5 E.	...	9	195 and 196	72
Krutez	Russia	51 55 N.	43 38 E.	...	8	232	4
Kurrachee	India	24 54 N.	66 58 E.	...	14	33	42
Laborville	Missouri	38 33 N.	90 43 W.	...	11	87	1
La Chapelle	France	49 49 N.	1 8 E.	...	9	107 and 109	6
Lacon	Illinois	40 4 N.	89 25 W.	...	10	104	1
Lac-qui-parle (Hazlewood.)	Minnesota	45 0 N.	95 55 W.	...	9	43 and 44	1 and 9
Ladakh	Thibet	34 0 N.	78 10 E.	...	12	188 (*a*)	142
Lafayette	Indiana	40 25 N.	86 49 W.	...	10	110 and 111	1
Lafayette	Ohio	40 45 N.	84 W.	...	10	109	1
La Fleche	France	47 42 N.	0 5 W.	...	9	151, 152 & 161	6
Lagrange	Georgia	33 2 N.	84 55 W.	...	12	128	1
Lagrange	Tennessee	35 15 N.	89 30 W.	...	11	95	1

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Lagrange College	Alabama	34° 40′ N.	87° 46′ W.	...	12	107 and 109	9
Laghouat	Algeria	33 47 N.	2 54 E.	2461	12	170	6
Laguna	New Mexico	35 3 N.	107 14 W.	...	11	39 and 40	2
Lahainoluna	Sandwich Islands	....	....	...	14	2	9
Lahore	India	31 34 N.	74 21 E.	...	12	186 (c)	142
Laichela (Vasa)	Finland	63 4 N.	21 40 E.	...	6	38 and 42	4
Lake Athabasca	British America	58 41 N.	111 18 W.	...	7	13	113
Lake City	Florida	30 12 N.	82 37 W.	174	12	134	1
Lake George	Michigan	46¼(?) N.	85 (?) W.	...	9	65	1
Lake Mills	Wisconsin	43 N.	89 W.	...	10	100	1
Lake Scuppernong	North Carolina	35 50 N.	76 25 W.	...	11	145	1
Lake Tamiagua	Mexico	21 20 N.	97 45 W.	...	14	7	15
Lake Washington	Mississippi	33 0 N.	91 6 W.	...	12	95 and 96	1
L'ke Winnibigoshish	Minnesota	47 30 N.	94 40 W.	...	9	50 and 51	1
Lamar	Pennsylvania	41 2 N.	77 43 W.	...	10	162	9
Lambertville	New Jersey	40 23 N.	74 56 W.	...	10	248	1
Lampeter	Wales	52 7 N.	4 5 W.	420	8	54	13
Lancaster	England	54 4 N.	2 46 E.	...	8	60 and 66	27
Lancaster	Missouri	40 30 N.	92 30 W.	...	10	83	1
Lancaster	Ohio	39 40 N.	82 40 W.	1020	11	115	1 and 9
Lancaster	Pennsylvania	40 3 N.	76 21 W.	700	10	192, 195 & 196	1 and 8
Landbohoiskolan	Denmark	55 41 N.	12 32 E.	...	7	63 (b)	139
Lansing	Michigan	42 44 N.	84 15 W.	850	10	123	1
Lansingburg	New York	42 47 N.	73 43 W.	30	10	220 and 227	3
Lapham	Minnesota	46 10 N.	96 0 W.	850	9	44	1
Laporte	Indiana	41 40 N.	86 41 W.	...	10	111	1
Laredo	Texas	27 30 N.	100 17 W.	...	13	21	15
Larnaca	Cyprus	34 55 N.	33 40 E.	25	12	178	7
Larissa	Texas	31 45 N.	95 50 W.	...	12	69	1
La Saulsaie	France	45 54 N.	5 0 E.	...	9	136 and 138	6
Las Vegas	New Mexico	35 35 N.	105 16 W.	...	11	47 and 50	2
Latrobe	Pennsylvania	40 27 N.	79 32 W.	...	10	144	1
Laukas	Finland	62 25 N.	25 50 E	...	6	56	4
Lawrence	Kansas	38 58 N.	95 12 W.	800	11	72 and 73	1
Lawrence	Massachusetts	42 42 N.	71 11 W.	133	10	295 and 296	1
Leavenworth	Kansas	39 19 N.	94 55 W.	809	11	71 and 73	1
Lebanon	Illinois	38 37 N.	89 56 W.	...	11	91	1
Lebanon	Ohio	39 24 N.	84 7 W.	...	11	109	9
Lebanon	Tennessee	36 15 N.	86 15 W.	...	11	103 and 104	1
Lebanon	Wisconsin	44 24 N.	88 42 W.	...	10	97	1
Lecompton	Kansas	39 2 N.	95 10 W.	760	11	71	1
Ledyard (Cayuga Academy.)	New York	42 43 N.	76 37 W.	447	10	169 and 187	3
Lee	Maine	45 17 N.	68 21 W.	...	9	76	1
Leeds	England	53 48 N.	10 30 W.	138	8	76 and 80	13
Leesburg	Virginia	39 8 N.	77 33 W.	...	11	126	1
Lee's Creek	Indian Territory	36 30 N.	97 30 W.	...	11	67	1
Leeuwarden	Holland	53 12 N.	5 49 E.	24	8	157 and 160	14, 21 and 39
Leh	Thibet	34 10 N.	77 45 E.	...	12	224	119
Leipsic	Saxony	51 22 N.	12 20 E.	386	8	192	21
Leitersburg	Maryland	39 35 N.	77 30 W.	...	11	131	1
Leith	Scotland	55 59 N.	3 10 W.	...	7	49	7
Lemberg	Austria	49 52 N.	24 3 E.	928	9	348	14
Lemo-Gannula	Finland	60 32 N.	21 45 E.	...	6	43 and 45	4
Lenkoran	Russia	38 44 N.	48 41 E.	—65	11	219	65 and 20
Lenox	New York	42 57 N.	75 47 W.	...	10	160	1
Leo	Indiana	41 N.	85 W.	...	10	114	1
Leon	Spain	42 36 N.	5 37 W.	2789	10	338 and 343	29
Leonardstown	Maryland	38 17 N.	76 43 W.	...	11	138	1
Leonardsville	New York	42 46 N.	75 23 W.	...	10	187	9
Le Puy	France	45 3 N.	3 53 E.	...	9	127 and 138	6
Leroy	Kansas	38 6 N.	95 3 W.	...	11	72	1
Leroy	New York	42 56 N.	78 6 W.	...	10	160	1
Le Sentier	Switzerland	46 36 N.	6 20 E.	...	9	167 and 178	72
Lewinsville	Virginia	38 56 N.	77 4 W.	...	11	125 and 126	1
Lewisburg	Pennsylvania	40 58 N.	76 58 W.	...	10	195 and 196	1
Lewisburg	Virginia	37 49 N.	80 28 W.	2000	11	118 and 119	1
Lewiston	New York	43 9 N.	79 10 W.	280	10	148 and 160	3
Lewistown	Pennsylvania	40 35 N.	77 37 W.	...	10	167	8
Lewisville	Ohio	40 23 N.	81 53 W.	...	10	125	1
Lexington	Kentucky	38 6 N.	84 18 W.	...	11	107	1
Lexington	Missouri	39 10 N.	93 50 W.	...	11	80	1
Lexington	Virginia	37 41 N.	79 25 W.	...	11	120	1

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Leyden	New York	43° 25′ N.	75° 30′ W.	900	10	209	1
Libau	Russia	56 30 N.	21 1 E.	...	7	91	20
Liberty	New York	41 50 N.	74 52 W.	1474	10	242 and 243	1
Lifeboat Cove	North Greenland	73 23 N.	73 13 W.	...			
Lille	France	50 39 N.	3 4 E.	...	8	136 and 138	6
Lima	New York	42 53 N.	77 50 W.	...	10	160	1
Lima	Pennsylvania	39 55 N.	75 25 W.	196	11	132 and 151	1
Limerick	Ireland	52 40 N.	8 38 W.	92	8	41 and 44	26
Limington	Maine	43 40 N.	70 40 W.	500	10	309	1
Lind	Wisconsin	44 20 N.	89 0 W.	...	10	96 and 97	1
Linden	Pennsylvania	41 10 N.	77 11 W.	514	10	167	1
Lindesnes	Norway	58 0 N.	7 2 E.	...	7	52	14
Linkoping	Sweden	58 25 N.	15 34 E.	...	7	78, 79 & 90	10
Lisbon	Maine	44 0 N.	70 4 W.	130	10	309	1
Lisbon	Portugal	38 42 N.	9 8 W.	335	11	182	21, 29 and 7
Lisle	New York	42 21 N.	76 7 W.	...	10	187	1
Litchfield	Connecticut	41 46 N.	73 12 W.	...	10	262 and 267	3 (?)
Litchfield	Michigan	42 2 N.	84 35 W.	...	10	116	1
Lister	Norway	58 6 N.	6 34 E.	...	7	51	14
Little Compton	Rhode Island	41 30 N.	71 15 W.	...	10	289	9
Little Genesee	New York	42 0 N.	78 36 W.	...	10	160	1
Little Hocking	Ohio	39 25 N.	81 0 W.	...	11	115	1
Little Mountain	Ohio	41 38 N.	81 16 W.	...	10	129	1
Little Rock	Arkansas	34 40 N.	92 12 W.	...	12	78 and 81	1 and 32(?)
Little Rock Arsenal	Arkansas	34 40 N.	92 12 W.	...	12	79 and 81	2
Littleton	New Hampshire	44 20 N.	72 0 W.	...	10	277	1
Little Whale River.	Labrador	56 2 N.	79 20 W.	...	7	17	1
Liverpool	England	53 24 N.	3 0 W.	212	8	67 and 80	13 and 68
Livingston	Alabama	32 38 N.	88 14 W.	180	12	115	1
Lizard	Iowa	42 30 N.	94 25 W.	...	10	70	1
Llanado	Mexico	20 N.	99 W.	...	14	7	15
Llandudno	Wales	53 20 N.	3 51 W.	100	8	55	13
Loammi	Illinois	39 40 N.	90 W.	680	11	91	1
Lockhart	Texas	29 51 N.	97 44 W.	...	13	27	1
Lockport	New York	43 10 N.	78 51 W.	...	10	160	1 and 9
Lodi	New York	42 57 N.	76 55 W.	1000	10	186 and 187	1
Lodianah	India	30 55 N.	75 54 E.	...	12	187 & 188 (*b*)	142
Logansport	Indiana	40 45 N.	86 14 W.	600	10	110 and 111	1
Lohn	Switzerland	47 45 N.	8 35 W.	...	9	187 and 196	72
Loma Grande	Texas	29 30 N.	97 30 W.	...	13	15	15
London	England	51 31 N.	0 7 W.	...	8	111 and 118	68
London	Kentucky	37 12 N.	84 3 W.	...	11	107	1
Londonderry	Ireland	55 0 N.	7 15 W.	...	...	21 and 25	24
Londonderry	New Hampshire	42 53 N.	71 20 W.	...	10	280 and 281	1
London Ridge	New Hampshire	43 20 N.	71 25 W.	...	10	281	1
Long Branch	New Jersey	40 20 N.	74 6 W.	...	10	248	1
Long Point	Texas	30 16 N.	96 30 W.	...	12	72	1
Longwood	Virginia	37 30 N.	79 31 W.	800	11	120	1
Lons-le-Saulnier	France	46 41 N.	5 32 E.	10	9	145 and 148	11
Lookout Mountain.	Tennessee	35 15 N.	85 15 W.	...	11	104	1
Los Angeles	California	34 3 N.	118 12 W.	...	12	9 and 12	2
Los Pinos	New Mexico	34 51 N.	106 39 W.	5000	12	41 and 42	2
Lougan	Russia	48 35 N.	39 21 E.	330	9	364	4, 16, 20 & [36
Louisville	Illinois	38 40 N.	88 30 W.	...	11	93	1
Louisville	Kentucky	38 3 N.	85 30 W.	452	11	107	1 and 9
Louvain	Belgium	50 53 N.	4 41 E.	...	8	142 and 143	44
Lowell	Massachusetts	42 39 N.	71 19 W.	...	10	296	1
Lower Saginaw	Michigan	43 30 N.	83 51 W.	...	10	118	1
Lowville	New York	43 46 N.	75 38 W.	800	10	199 and 209	1 and 3
Lucknow	Hindoostan	26 49 N.	80 52 E.	...	13	86, 93(*a*) and [93(*b*)	23 and 141
Ludlowville	New York	42 33 N.	76 35 W.	600	10	187	1
Lugano	Switzerland	46 0 N.	9 5 E.	...	9	228 and 237	72
Lund	Sweden	55 56 N.	13 8 E.	...	7	68 and 69	10
Lunenburg	Germany	53 15 N.	10 28 E.	...	8	170 and 173	68
Lunenburg	Massachusetts	42 35 N.	71 43 W.	...	10	296	1
Lunenburg	Vermont	44 28 N.	71 41 W.	1124	10	252	1
Luray	Missouri	40 28 N.	91 55 W.	...	10	83	1
Luxemburg	Holland	49 37 N.	6 11 E.	1020	9	274	21
Lynchburg	Virginia	37 23 N.	79 6 W.	...	11	120	1
Lynn	Massachusetts	42 28 N.	70 57 W.	...	10	296	1
Lyons	France	45 46 N.	4 50 E.	636	9	135 and 138	11
Lyons	Iowa	41 50 N.	90 10 W.	401	10	91	1
Lyons	New York	43 4 N.	77 4 W.	...	10	160	1

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Lyttleton	New Zealand........	43° 33′ S.	172° 43′ E.	...	27	79 and 82	34
Maastricht	Holland...............	50 51 N.	5 42 E.	174	8	149 and 151	21
McGrawville	New York............	42 34 N.	76 11 W.	1450	10	186 and 187	1
Machias...............	Maine	44 40 N.	67 24 W.	...	10	314	9
Mackinac.............	Michigan............	45 53 N.	85 5 W.	...	9	62 and 65	2
Macomb	Illinois	40 30 N.	90 40 W.	...	10	102	1 and 9
Macon	Georgia	32 50 N.	83 40 W.	...	12	132	1
Madison	Indiana...............	38 45 N.	85 14 W.	...	11	101	1
Madison	Ohio	41 49 N.	81 5 W.	620	10	128 and 129	1
Madison	Wisconsin	43 5 N.	89 25 W.	892	10	99 and 100	1
Madison Barracks...	New York............	43 57 N.	76 15 W.	...	10	198 and 209	2
Madison Court House	Virginia	38 22 N.	78 16 W.	...	11	119	1
Madras................	Hindoostan..........	13 5 N.	80 25 E.	27	16	36 and 37	14, 20 and 68
Madrid	New York............	44 43 N.	75 33 W.	280	10	208 and 209	1
Madrid	Spain	40 25 N.	3 45 W.	2149	10	347 and 349	14, 21 and 29
Mafra..................	Portugal..............	38 55 N.	9 11 W.	...	11	183	49 and 68
Magdalena Bay......	Spitzbergen..........	79 34 N.	11 9 E.	10	3	10	37
Magnolia..............	Illinois................	41 15 N.	89 15 W.	...	10	107	1
Maibolgaard	Denmark.............	54 55 N.	9 56 E.	...	8	180 (*a*)	139
Mailand (see Milan.)							
Makerstown	Scotland.............	55 36 N.	2 31 W.	...	7	47 and 48	68
Maldonado	Uruguay	34 38 S.	55 0 W.	...	25	25	116
Malone	New York............	44 50 N.	74 23 W.	703	10	203 and 209	3
Malta	Mediterranean Sea..	35 54 N.	14 34 E.	232 & 111	11	205	14 and 38
Manatee	Florida	27 29 N.	82 39 W.	...	13	50	1
Manchester..........	England	53 25 N.	2 10 W.	123	8	70 and 80	13, 21 & 27
Manchester..........	Illinois................	39 33 N.	90 34 W.	683	11	90 and 91	1
Manchester..........	Iowa	42 30 N.	91 30 W.	...	10	89	1
Manchester..........	Michigan	42 20 N.	85 45 W.	...	10	123	1
Manchester..........	New Hampshire.....	42 59 N.	71 28 W.	300	10	280 and 281	1
Manchester..........	Pennsylvania.......	40 32 N.	80 3 W.	...	10	144	1
Mandal	Norway	58 2 N.	6 59 E.	54	7	53	19
Manhattan	Kansas................	39 13 N.	96 45 W.	...	11	69 and 73	1
Manhegin Island....	Maine	43 40 N.	69 17 W.	...	10	311	9
Manheim..............	Baden	49 26 N.	8 31 E.	...	9	277, 278, 279 &	21, 24 & 137
Mankato..............	Minnesota...........	44 8 N.	93 30 W.	...	10	77 [279(*a*)	1
Manitowoc	Wisconsin	44 7 N.	87 37 W.	80	10	96 and 97	1
Mansfield.............	Ohio	40 46 N.	82 33 W.	...	10	332 and 334	1
Mansfield Woodh'se	England	53 8 N.	1 1 W.	...	8	78 and 80	68
Manzanilla Island..	New Grenada	9 21 N.	79 57 W.	...	17	16 and 18	1
Mapleton..............	Kansas................	38 4 N.	94 51 W.	...	11	72 and 73	1
Maquoketa	Iowa....................	42 4 N.	90 41 W.	...	10	88 and 89	1
Marathon.............	New York............	42 24 N.	76 0 W.	...	10	187	1
Marble Rock	Iowa	43 N.	93 W.	...	10	80	1
Marchairuz..........	Switzerland..........	46 33 N.	6 20 E.	...	9	166 and 178	72 and 21
Marchmont..........	Scotland........	55 44 N.	2 25 W.	500	7	49	7
Marengo	Illinois	42 14 N.	88 38 W.	842	10	106 and 107	1
Mare Island.........	California	38 4 N.	122 15 W.	...	11	17	1
Marietta..............	Ohio	39 25 N.	81 29 W.	...	11	113 and 115	1, 97 & 120
Marion................	Mississippi..........	33 30 N.	90 20 W.	...	12	99	1
Marion................	Ohio	40 36 N.	83 12 W.	...	10	125	1
Marlborough	North Carolina	35 28 N.	75 36 W.	...	11	....	1
Marlborough College	England	51 25 N.	1 43 W.	456	8	102 and 118	13
Markree	Ireland................	54 14 N.	8 28 W.	...	8	28 and 33	25
Marquette............	Michigan..............	46 32 N.	87 41 W.	630	9	56 and 57	1
Marschlins...........	Switzerland	46 57 N.	9 35 E.	...	9	258 and 273	72
Marseilles	France	43 18 N.	5 27 E.	...	10	367 and 368	6, 11, 21, 24 &
Marsh's Ranch.......	California............	38 N.	122 W.	...	11	26	1 [28
Martigny	Switzerland	46 6 N.	7 5 E.	...	9	239 and 248	72
Martin's Cove........	Terra-del-Fuego.....	55 51 S.	67 32 W.	20	30	28	108 and 116
Martin's Ferry	Ohio	40 10 N.	80 49 W.	...	10	129	1
Martinez..............	California	38 0 N.	122 6 W.	...	11	26	1
Maryville	California............	39 12 N.	121 42 W.	80	11	15 and 21	1 [87
Massowah...........	Abyssinia	15 35 N.	39 33 E.	5	15	30	6, 21, 35 &
Matamoras...........	Mexico.................	25 56 N.	97 36 W.	...	13	7, 8 and 25	15 and 2
Matanzas.............	Cuba	23 3 N.	81 30 W.	...	14	16 and 17	32
Mattoon	Illinois................	39 29 N.	88 15 W.	740	71	93	1
Maui....................	Sandwich Islands...	22 45 N.	156 0 W.	...	14	2	9
Mauritius	Indian Ocean........	20 20 S.	57 40 E.	...	23	43	14
Maysville	Kentucky	38 42 N.	83 35 W.	...	11	110	1
Mazatlan.............	Mexico	16 0 N.	95 20 W.	...	15	11	9
Meadow Dale........	Virginia	38 23 N.	79 35 W.	1800	11	119	1

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Meadow Valley	California	40° 20′ N.	121° 15′ W.	...	10	20 and 21	1
Meadville	Pennsylvania	41 39 N.	80 11 W.	1088	10	135 and 138	1 and 9
Mechanicsville	Virginia	38 50 N.	78 W.	...	11	126	1
Medfield	Massachusetts	42 28 N.	71 14 W.	...	10	296	9
Medina	Ohio	41 7 N.	81 42 W.	1206	10	128 and 129	1
Mediterranean Sea	...	...	...	...	12	177	68
Medynet el Fayoun	Egypt	29 18 N.	30 45 E.	...	13	...	70
Meerut	India	28 54 N.	77 44 E.	...	13	79 & 79 (*a*)	23
Melbourne	Australia	37 49 S.	144 58 E.	121	26	78	14, 18 & 21
Melinka	Chili	43 52 S.	73 50 W.	...	27	17 (*c*)	137
Melville Island	Arctic Ocean	74 45 N.	110 48 W.	10	4	4	100
Memphis	Tennessee	35 8 N.	90 0 W.	262	11	94 and 95	1
Menasha	Wisconsin	44 13 N.	88 18 W.	...	10	96 and 97	1
Mendon	Massachusetts	42 6 N.	71 33 W.	...	10	297, 299 & 300	1 and 31
Mendoza	Chili	32 51 S.	67 32 W.	2379	25	22	137
Mendrisio	Switzerland	45 52 N.	9 5 E.	...	9	247 and 248	72
Mentone	Italy	43 45 N.	7 34 E.	30	10	370	7
Mercersburg	Pennsylvania	39 50 N.	77 55 W.	...	11	127	9
Mergentheim	Baden	49 28 N.	9 47 E.	...	9	280	28
Merom	Indiana	39 10 N.	87 40 W.	...	11	99	1
Merve	Turkestan	37 20 N.	62 E.	...	11	222	119
Metz	France	49 7 N.	6 10 E.	595	9	124 and 126	6
Mexico	Mexico	19 26 N.	99 1 W.	7665	14	6 and 7	1 and 15
Mexico	New York	43 27 N.	76 74 W.	423	10	174 and 187	3 and 1
Micanopy	Florida	29 35 N.	82 31 W.	78	13	42	1
Michigan City	Indiana	41 41 N.	86 53 W.	622	10	110 and 111	1
Michipicoton	Canada West	47 56 N.	84 50 W.	...	9	59	5 and 1
Middlebury	New York	42 49 N.	78 10 W.	800	10	153 and 160	3
Middlebury	Ohio	41 8 N.	81 31 W.	...	10	129	1
Middlebury	Vermont	44 3 N.	73 12 W.	...	10	252	1 and 9
Middletown	Connecticut	41 33 N.	72 39 W.	175	10	267	1 and 5
Middletown	New Jersey	40 26 N.	74 10 W.	...	10	246 and 248	68
Mifflintown	Pennsylvania	40 32 N.	77 28 W.	...	10	167	8 and 9
Milan	Lombardy	45 28 N.	9 11 E.	482	9	306	22
Milford	Delaware	38 55 N.	75 27 W.	25	11	132 and 147	1
Milford	Pennsylvania	41 18 N.	74 50 W.	...	10	190	8
Millbrook	Channel Islands	49 12 N.	2 7 W.	50	9	97	7
Milledgeville	Georgia	33 7 N.	83 20 W.	...	12	128	1 and 9
Millersburg	Kentucky	38 10 N.	84 17 W.	804	11	110	1
Mill Point	Michigan	43 6 N.	86 11 W.	...	10	118	1
Milltown	Ireland	54 23 N.	9 41 W.	200	8	26 and 32	13
Millville	New York	43 8 N.	78 20 W.	...	10	151 and 160	3
Milne Graden	Scotland	55 42 N.	2 12 W.	100	7	49	7
Milnersville	Ohio	40 10 N.	81 45 W.	...	10	129	1
Mild	New York	42 30 N.	77 10 W.	868	...	187	1
Milton	Indiana	39 47 N.	85 2 W.	...	11	100 and 101	1
Milton	Massachusetts	42 16 N.	71 4 W.	...	10	300	1
Milwaukie	Wisconsin	43 4 N.	87 58 W.	593	10	99 and 100	1
Minaville	New York	42 54 N.	74 15 W.	...	10	227	1
Mine Creek	Texas	30 25 N.	97 26 W.	600	12	62	1
Mineral Ridge	Iowa	42 6 N.	93 40 W.	1200	10	80	1
Minitetlan	Mexico	17 59 N.	94 7 W.	60	15	12	1
Minneapolis	Minnesota	45 0 N.	93 10 W.	...	9	77	1
Minsk	Russia	53 44 N.	27 14 E.	...	8	220	36
Mirador	Mexico	19 50 N.	96 25 W.	3600	15	9	1
Mishawaka	Indiana	41 39 N.	86 2 W.	685	10	111	1
Mitau	Russia	56 29 N.	23 44 E.	13	7	79 and 82	20
Mobile	Alabama	30 42 N.	87 59 W.	188	12	105 and 106	1
Moneka	Kansas	38 19 N.	94 49 W.	...	11	72	1
Mongonui	New Zealand	35 0 S.	174 E.	...	26	90 (*a*)	137
Monroe	Illinois	42 8 N.	87 55 W.	...	10	107	1
Monroe	Michigan	41 56 N.	83 22 W.	590	10	122 and 123	1
Monroe Piers	Michigan	41 53 N.	83 19 W.	...	10	123	75
Monroeville	Alabama	31 33 N.	87 25 W.	...	12	117	1
Monsol	France	46 13 N.	4 36 E.	10	9	140 and 148	11
Monson	Maine	45 11 N.	69 35 W.	1100	9	75 and 76	1
Montbeliard	France	47 29 N.	6 48 E.	...	9	160 and 161	11
Montcalm	Virginia	38 5 N.	78 21 W.	...	11	118 and 119	1
Monterey	California	36 40 N.	121 55 W.	40	11	28 and 29	1, 2, and 9
Monterey	Mexico	25 4 N.	100 32 W.	...	13	8	15
Monte Video	Uruguay	34 52 S.	56 7 W.	26	25	25	113
Montgomery	Alabama	32 25 N.	86 23 W.	...	12	115	1
Montgomery	Colorado	39 N.	106 W.	...	11	51	1

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Montgomery	New York...........	41° 32′ N.	74° 0′ W.	...	10	235 and 243	3
Monticello	Iowa..................	42 15 N.	91 15 W.	...	10	88 and 89	1
Monticello	Mississippi..........	31 34 N.	90 0 W.	...	12	102	1
Monticello	Virginia	37 58 N.	78 24 W.	...	11	119	81 (?)
Montmorenci	France	49 0 N.	2 20 E.	400	9	117 and 118	48
Montpelier	France	43 37 N.	3 50 E.	193	10	367 and 368	48 (?)
Montpelier	Vermont..............	44 17 N.	72 36 W.	...	10	254	1
Montreal..............	Canada East	45 30 N.	73 36 W.	57	9	66, 67, 68 & 69	1 and 93
Montreux	Switzerland	46 26 N.	6 50 E.	...	9	170	72
Montrose..............	Scotland..............	56 43 N.	2 26 W.	14	7	43	7
Montrose..............	Virginia	38 7 N.	76 54 W.	200	11	142 and 143	1
Montview	Virginia	38 N.	78 30 W.	...	11	119	1
Montville	Ohio...................	41 7 N.	81 47 W.	...	10	129	1
Moorestown	New Jersey..........	39 58 N.	75 2 W.	104	11	155	1
Moose Factory.......	Hudson's Bay Terr..	51 18 N.	80 45 W.	...	8	16 (*a*)	1
Moquelumne Hill...	California............	38 49 N.	120 28 W.	1502	11	20	1
Moquete	Mexico	25 39 N.	98 W.	...	13	8	15
Morar..................	India	....	....	...	13	88	23
Morges.................	Switzerland	46 30 N.	6 35 E.	...	9	176 and 178	72
Moriches	New York............	40 40 N.	72 36 W.	...	10	273	1
Morley.................	New York............	44 40 N.	75 0 W.	...	10	209	1
Morrisania	New York............	40 53 N.	74 1 W.	190	10	242 and 243	1
Morrisville...........	Pennsylvania........	40 12 N.	74 53 W.	30	10	185 and 196	1
Moscow................	Russia	55 45 N.	37 31 E.	400	7	94	4 and 21
Mosinee...............	Wisconsin	44 44 N.	89 35 W.	..	10	84, 85 & 86	1
Moss Grove..........	Pennsylvania.......	41 40 N.	79 51 W.	68	10	137 and 138	1
Mossy Creek	Virginia	38 30 N.	79 0 W.	...	11	119	1
Mostagnen	Algeria................	35 55 N.	0 5 E.	...	11	200 and 201	6
Mosul..................	Mesopotamia	36 12 N.	42 39 E.	...	11	214	1
Mota	Abyssinia............	11 10 N.	37 45 E.	...	16	28	35
Moulton	Alabama	34 32 N.	87 25 W.	643	12	107, 108 & 109	1
Moultan	India	30 14 N.	71 27 E.	450	12	185 & 185 (*a*)	14 and 142
Mount Airy..........	Alabama	32 20 N.	86 52 W	...	12	115	1
Mount Atlas.........	Tennessee............	36 0 N.	88 20 W.	...	11	95	9
Mount Auburn.......	Ohio...................	?	?	1000	11	109	1
Mountain City.......	Colorado	39 35 N.	105 10 W.	...	11	51	1
Mountain Home.....	Arkansas.............	36 30 N.	92 30 W.	...	11	79	1
Mount Carmel.......	Indiana	39 22 N.	84 51 W.	900	11	101	1
Mount Holly	New Jersey..........	40 0 N.	74 47 W.	...	10	248	1
Mount Joy............	Pennsylvania.......	40 8 N.	77 32 W.	...	10	167 and 195	1
Mount Olive..........	North Carolina	35 45 N.	78 W.	...	11	145	1
Mount Pleasant.....	Iowa	41 0 N.	91 38 W.	...	10	91	1
Mount Pleasant.....	New York............	41 9 N.	73 47 W.	125	10	239 and 243	3
Mount Pleasant.....	Ohio...................	40 20 N.	80 32 W.	...	10	129	1
Mount Pleasant.....	South Carolina	32 47 N.	79 55 W.	...	12	144 and 145	1
Mount St. Gothard..	Switzerland	46 36 N.	8 39 E.	...	9	232, 233, 236 &	24 and 72
Mount Savage	Maryland	39 30 N.	79 W.	...	11	131 [237	68
Mount Seir...........	Persia	37 30 N.	45 10 E.	...	11	216	5
Mount Sinai..........	Arabia	28 30 N.	34 0 E.	...	13	75	64
Mount Solon	Virginia	38 5 N.	78 21 W.	...	11	119	1
Mount Sterling.......	Illinois................	40 N.	91 15 W.	...	10	102	1
Mount Tabor.........	Ohio...................	40 15 N.	83 40 W.	...	10	125	1
Mount Union.........	Ohio...................	41 20 N.	81 1 W.	...	10	129	1
Mount Vernon	Iowa	42 0 N.	91 0 W.	...	10	91	1
Mount Vernon	Ohio...................	40 25 N.	82 31 W.	...	10	125	1
Mount Vernon Ars'l	Alabama	31 6 N.	88 5 W.	...	12	116 and 117	2
Mount Victory.......	Ohio...................	40 35 N.	83 36 W.	...	10	125	1
Mount Washington	New Hampshire.....	44 15 N.	71 16 W.	6285	10	274 and 277	57
Mourzouk............	Africa	25 54 N.	14 12 E.	...	13	71 (*a*)	58
Mowhaugh	Scotland..............	....	....	...	7	49	7
Mozufferpore	Hindoostan	26 9 N.	85 24 E.	...	13	96 and 97	89
Muhlhausen..........	Prussia	51 14 N.	10 29 E.	686	8	175	21
Mulberry Hill........	Virginia	36 50 N.	76 50 W.	...	11	143	1
Multan................	India	30 8 N.	71 28 E.	...	12		
Muncie................	Indiana	40 12 N.	85 20 W.	...	10	114	1
Munich	Bavaria	48 9 N.	11 37 E.	1676	9	300 and 304	21 and 24
Munster	Prussia................	51 58 N.	7 36 E.	...	8	165 and 173	33 and 21
Muonioniska	Finmark..............	68 1 N.	23 43 E.	...	5	20	37
Murcia	Spain	37 59 N.	1 12 W.	141	11	193 and 196	29
Murfreesboro'........	North Carolina	36 30 N.	77 6 W.	...	11	144 and 145	1
Muri	Switzerland	47 16 N.	8 20 E.	...	9	211 and 237	72
Murphy's	California............	38 10 N.	120 6 W.	...	11	20	1
Murree	India	30 30 N.	77 0 E.	...	12	186 (*g*) & 186 (*h*)	142

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Murrysville	Pennsylvania	40° 28′ N.	79° 35′ W.	960	10	91	1
Muscatine	Iowa	41 26 N.	91 5 W.	586	10	90 and 91	1 and 5
Muskegon	Michigan	43 11 N.	86 6 W.	...	10	118	1
Mustapha	Virginia	39 30 N.	81 23 W.	...	11	116 and 117	1
Muthill	Scotland	56 20 N.	3 50 W.	245	7	43	7
Naesgaard	Denmark	54 53 N.	12 27 E.	...	7	180 (b)	139
Nagode	Hindoostan	?	?	...	13	91	23
Nagpoor	Hindoostan	21 9 N.	79 11 E.	...	14	34	89
Nain	Labrador	56 9 N.	61 30 W.	...	7	18	68
Nancy	France	48 45 N.	6 15 E.	...	9	125 and 126	48 (?)
Nangasaki	Japan	33 45 N.	130 0 E.	...	12	192	21
Nantes	France	47 14 N.	1 35 W.	...	9	99	6 and 21
Nantucket	Massachusetts	41 16 N.	70 6 W.	30	10	301 and 303	1 and 5
Napha	Loo-Choo-Islands	26 15 N.	127 40 E.	...	13	100	5
Napierville	Illinois	41 46 N.	88 10 W.	...	10	107	1
Naples	Italy	40 55 N.	14 20 E.	482	10	376 and 377	14 and 28
Nashville	Tennessee	36 10 N.	86 49 W.	...	11	102 and 104	1 and 5
Nasimowo	Siberia	59 45 N.	91 E.	...	7	122	16
Nassau	Bahamas	25 5 N.	77 2 W.	13	13	59	1 and 9
Nassau	New York	42 32 N.	73 40 W.	...	10	227	9
Natal	Africa	29 50 S.	30 55 E.	...	24	38	14
Natchez	Mississippi	31 34 N.	91 25 W.	254	12	100, 101 & 102	1, 5 and 31
Naval Hospital	New York	40 41 N.	74 1 W.	56	10	273	1
Naval Observatory	District of Columbia	38 54 N.	77 3 W.	50	11	133 and 138	131
Navigator's Island	Pacific Ocean	13½–14½S.	168–173W.	50	21	....	59
Navy Yard (Philadelphia.)	Pennsylvania	39 56 N.	75 10 W.	...	11	151	1 and 9
Nazareth	Pennsylvania	40 43 N.	75 21 W.	530	10	195 and 196	1
Nebraska City	Nebraska	40 40 N.	95 43 W.	1050	10	68	1
Neeah Bay	Washington	48 22 N.	124 37 W.	...	9	12 and 16	1
Nelson	New Zealand	41 15 S.	173 18 E.	18	27	80 and 82	34
Nemours	France	48 16 N.	2 42 E.	...	9	119	6
Neosho Falls	Kansas	38 3 N.	95 31 W.	...	11	72	1
Nephin	Ireland	54 1 N.	9 22 W.	...	8	33	26
Nertchinsk	Siberia	51 18 N.	119 21 E.	2130	8	244	4, 16, 20 & [36
Neuchatel	Switzerland	46 58 N.	6 53 E.	...	9	172 and 178	72
Neustadt	Germany	49 38 N.	10 43 E.	...	9	293 and 297	68
New Albany	Indiana	38 17 N.	85 45 W.	...	11	100 and 101	1
Newark	Delaware	39 38 N.	75 47 W.	120	11	132, 147 & 148	1 and 9
Newark	Michigan	42 30 N.	86 0 W.	...	10	115	1
Newark	New Jersey	40 45 N.	74 10 W.	30	10	247 and 248	1
Newark	Ohio	40 6 N.	82 28 W.	825	10	128 and 129	1
Newark Valley	New York	42 12 N.	76 5 W.	...	10	187	1
New Athens	Ohio	41 15 N.	81 0 W.	...	10	129	9
New Bedford	Massachusetts	41 39 N.	70 56 W.	90	10	298, 299 & 300	1, 5 and 31
Newbern	Alabama	32 41 N.	87 35 W.	...	12	115	1
New Braunfels (New Wied)	Texas	29 42 N.	98 15 W.	...	13	14 and 15	1
New Brunswick	New Jersey	40 30 N.	75 31 W.	90	10	248	1
New Buffalo	Michigan	41 45 N.	86 46 W.	661	10	116	1
Newburgh	New York	41 30 N.	74 5 W.	150	10	229 and 243	3
Newbury	Massachusetts	42 45 N.	70 55 W	...	10	296	1
Newbury	Vermont	44 6 N.	72 7 W.	...	10	250 and 252	3
Newburyport	Massachusetts	42 47 N.	70 52 W.	46	10	295 and 296	1 and 9
Newcastle	Delaware	39 40 N.	75 33 W.	...	11	146 and 147	2
Newcastle	Indiana	39 15 N.	85 27 W.	1000	11	101	1
Newcastle	Maine	44 7 N.	69 36 W.	88	10	309	1
New Chwang	Mantchooria	40 59 N.	122 40 E.	...	10	299	17
New Concord	Kentucky	36 39 N.	88 3 W.	...	11	97	9
New Concord	Ohio	40 3 N.	81 44 W.	...	10	129	1
New Creek Depot	Virginia	39 25 N.	79 0 W.	...	11	125 and 126	1
New Danemora	Wisconsin	44 17 N.	90 38 W.	...	10	84, 85 & 86	1
New England	Virginia	39 20 N.	81 0 W.	...	11	117	1
Newfield	New Jersey	39 30 N.	74 50 W.	...	11	153, 154 & 155	1
New Germantown	New Jersey	40 42 N.	74 50 W.	...	10	248	1
New Harmony	Indiana	38 8 N.	87 50 W.	320	11	98 and 99	1
New Haven	Connecticut	41 18 N.	72 57 W.	...	10	263 and 267	1 and 28
New Herrnhut	Greenland	64 50 N.	49 10 W.	...	6	13	68
New Holland[1]	Ohio	39 37 N.	83 7 W.	...	11	109	1
New Holstein	Wisconsin	43 45 N.	88 8 W.	...	10	97	1
New Lisbon	Ohio	40 45 N.	80 46 W.	961	10	128 and 129	1
New Lisbon	Wisconsin	43 45 N.	90 0 W.	...	10	93	1
New London	Connecticut	41 32 N.	72 3 W.	90	10	267	1

[1] Same as Williamsport.

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
New London	Wisconsin	44° 21′ N.	88° 45′ W.	...	10	96 and 97	1
New Malton	England	54 10 N.	0 48 W.	...	8	65 and 66	27
New Orleans	Louisiana	29 57 N.	90 0 W.	...	13	29, 30 & 31	1, 31 and 63
New Orleans Bar'ks	Louisiana	29 57 N.	89 59 W.	...	13	28 and 29	2
New Pitsligo	Scotland	57 35 N.	2 9 W.	501	7	39	7
Newport	Indiana	39 55 N.	84 45 W.	...	11	101	1
Newport	Kentucky	39 4 N.	83 24 W.	...	11	104	1
Newport	Rhode Island	41 29 N.	71 19 W.	...	10	287 and 289	1
Newport	Vermont	44 55 N.	72 20 W.	...	10	252	1
Newport Barracks...	Kentucky	39 5 N.	84 22 W.	...	11	105 and 107	2
New San Diego	California	32 41 N.	117 13 W.	...	12	11 and 12	2
New Sharon	Maine	44 37 N.	70 3 W.	...	10	311	1
New Smyrna	Florida	28 54 N.	81 2 W.	...	13	43 and 45	2
Newton	Iowa	42 N.	94 0 W.	...	10	82	1
Newton	New Jersey	41 6 N.	74 46 W.	...	10	248	1
Newtown	Pennsylvania	40 14 N.	74 57 W.	...	10	193 and 196	8
New Ulm	Minnesota	44 16 N.	94 26 W.	...	10	75	1
New Westfield	Ohio	41 13 N.	83 49 W.	...	10	125	1
New Wied (New Braunfels)	Texas	29 42 N.	98 15 W.	...	13	14 and 15	1
New Windsor	Maryland	39 32 N.	77 0 W.	...	11	131	1
New York City	New York	40 43 N.	74 5 W.	79	10	232, 233, 234 &	1, 3 and 5
New Zealand	South Pacific Ocean	34 to 47 S.	166 to 177 E.	...	27	82 [243	59, 108 & 116
Niagara	Canada West	43 9 N.	79 20 W.	...	10	130	1
Nice	Italy	43 42 N.	7 17 E.	...	10	369	7
Nichols	New York	42 0 N.	76 32 W.	...	10	186 and 187	1
Nicholasville	Kentucky	37 58 N.	84 18 W.	...	11	107	1
Nightingale Hall	South Carolina	....	....	...	12	141	76
Nijne Tchirsk	Russia	48 20 N.	43 8 E.	...	9	365	16 and 20
Nijnii Taguilsk	Siberia	57 55 N.	60 0 E.	730	7	113	4, 20 and 50
Nijnii Kolinsk	Siberia	68 32 N.	160 57 E.	...	5	26	138
Nijnii Novgorod	Russia	56 19 N.	44 0 E.	...	7	105	4
Nikolaief	Russia	46 58 N.	31 58 E.	85	9	356	4
Nikolaievsk	Siberia	53 8 N.	143 3 E.	...	8	246	20
Nile (River)	Egypt	24 to 30 N.	31 to 33 E.	10 to 130	14	73 and 74	64
Nile (River)	Nubia	22 to 24 N.	31½ to 33 E.	130 to 500	14	29	64
Nolin	Kentucky	37 40 N.	85 35 W.	..	11	....	1
Nookton	Scotland	56 11 N.	3 3 W.	80	7	49	7
Norderney	North Sea	53 42 N.	7 7 E.	10	8	163 and 173	33
Norfolk	Virginia	36 57 N.	76 19 W.	...	11	143	1 and 9
Norristown	Pennsylvania	40 8 N.	75 19 W.	153	10	195 and 196	1 and 9
North Abingdon	Pennsylvania	41 15 N.	76 W.	...	10	190	1
Northampton	Massachusetts	42 19 N.	72 38 W.	...	10	260	9
North Argyle	New York	43 0 N.	72 29 W.	...	10	227	1
North Attleboro'	Massachusetts	41 59 N.	71 22 W.	175	10	299 and 300	1
North Barnstead	New Hampshire	43 38 N.	74 27 W.	...	10	276 and 277	1
North Bass Island ...	Ohio	41 36 N.	82 42 W.	587	10	125	1
North Belgrade	Maine	44 30 N.	69 53 W.	...	10	311	1
North Bend	Ohio	39 8 N.	84 35 W.	800	11	109	1
North Billerica	Massachusetts	42 34 N.	71 16 W.	...	10	296	1
North Bridgeton	Maine	44 3 N.	70 45 W.	...	10	309	1
North Colebrook	Connecticut	42 1 N.	73 4 W.	...	10	267	1
North Craftsbury ...	Vermont	44 40 N.	72 30 W.	...	10	251 and 252	1
Northeast	Pennsylvania	42 12 N.	80 0 W.	...	10	138	1
North Esk Reservoir	Scotland	55 48 N.	3 21 W.	1150	7	49	7
North Fairfield	Ohio	41 8 N.	82 40 W.	...	10	125	1
North Hammond	New York	44 30 N.	75 40 W.	...	10	209	1
North Littleton	New Hampshire	44 20 N.	71 49 W.	...	10	277	1
North Nassau	New York	42 33 N.	73 41 W.	...	10	227	1
Northport	Michigan	45 8 N.	85 41 W.	...	9	65	1
North Prospect	Maine	44 28 N.	68 58 W.	...	10	311	1
North Salem	New York	41 20 N.	73 38 W.	361	10	240 and 243	1 and 3
North Scituate	Rhode Island	41 50 N.	71 34 W.	...	10	288 and 289	1
North Sea	....	....	....	...	7	50	129
North Shields	England	55 N.	1 27 W.	124	7	63 and 66	13
Northumberland	Pennsylvania	40 55 N.	76 49 W.	...	10	191 and 196	8
" Sound	Arctic Ocean	76 52 N.	97 W.	...	3	1	109
North Unst	Scotland	....	....	...	7	29	7
Northwood	Ohio	40 30 N.	83 51 W.	...	10	125 and 124	1
North Volney	New Jersey	43 15 N.	43 20 W.	...	10	227	1
North Whitehall	Pennsylvania	40 40 N.	75 26 W.	200	10	196 and 195	1

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North Yarmouth....	Massachusetts	41° 45′ N.	70° 11′ W.	...	10	303	9
Norton	Ohio......................	41 15 N.	81 30 W.	...	10	129	1
Norwalk...............	Connecticut	41 7 N.	73 23 W.	...	10	267	1
Norwalk	Ohio......................	41 13 N.	82 43 W.	...	10	124 and 125	1
Norway	Maine	44 12 N.	70 39 W.	...	10	309	1
Norway	Wisconsin	42 50 N.	88 10 W.	753	10	99 and 100	1
Norway House.......	Hudson's Bay Terr..	55 0 N.	98 W.	...	7	14	5
Norwich	Connecticut	41 32 N.	72 3 W.	50	10	266 and 267	1
Norwich	England	52 30 N.	1 14 E.	50	8	92 and 94	13
Norwich	Vermont...............	43 42 N.	72 21 W.	...	10	255 and 256	1
Notre Dame	Indiana................	41 45 N.	86 10 W.	...	10	111	1
Nottingham	England	52 56 N.	1 9 W.	181 & 239	8	84 and 94	13, 21, 27 & 54
Nottingham	Maryland	38 42 N.	76 41 W.	...	11	138	1
Nova Zembla	Arctic Ocean	73 N.	56 E.	...	4	21	14
Novogorod	Russia..................	58 34 N.	31 17 E.	...	7	92	16
Novo Petrowsk	Turkistan	44 27 N.	50 8 E.	100	10	399	14, 16 and 20
Nowgong..............	India	?	?	...	13	92	23
Nulato	Alaska Territory....	64 42 N.	157 58 W.	...	6	6 and 6½	1 and 5
Nursery Hill	Nevada	40 40 N.	30 28 E.	...	10	68	1
Nyack..................	New York	41 5 N.	74 0 W.	124	10	243	1
Nykoping.............	Sweden	58 45 N.	17 1 E.	...	7	82	10
Nymegen	Holland................	51 50 N.	5 52 E.	...	8	148 and 151	21, 39 and 43
Oahu	Sandwich Islands...	21 20 N.	158 22 W.	...	14	2	9
Oakland	Maryland	39 40 N.	79 0 W.	...	11	143 and 144	1
Oasis Kanar	Africa	18 57 N.	13 30 E.	...	15	29 (a)	58
Oban	Scotland...............	....	....	...	7	31	7
Oberlin	Ohio......................	41 20 N.	82 15 W.	800	10	128 and 129	1
Obir....................	Austria	46 30 N.	14 7 E.	7016	9	317 and 320	22
Ocala..................	Florida.................	?	?	...	13	42	1
Odanah...............	Wisconsin	46 33 N.	91 0 W.	...	9	53	1
Odessa	Russia	46 25 N.	30 44 E.	147	9	353 and 355	4
Ogdensburg	New York	44 43 N.	75 26 W.	232	10	201 and 209	1 and 5
Oglethorpe Barracks	Georgia................	32 6 N.	81 8 W.	...	12	131 and 132	2
Oil City...............	Pennsylvania........	41 24 N.	79 50 W.	...	10	138	1
Olatha	Kansas.................	38 50 N.	94 30 W.	...	11	72	1
Old Mission..........	Michigan	44 35 N.	85 30 W.	...	9	118	1
Old Point Comfort..	Virginia...............	37 2 N.	76 12 W.	...	11	140, 141 & 143	2
Oldtown	Maine	44 48 N.	68 45 W.	...	10	311	1
Olga Bay.............	Siberia.................	....	....	...	10	400 (b)	126
Olmutz................	Moravia................	49 35 N.	16 48 E.	...	9	339 and 340	22
Olten	Switzerland	47 21 N.	7 50 E.	...	9	181 and 196	72
Omaha	Nebraska..............	41 15 N.	96 10 W.	1300	10	67 and 68	1
Omsk..................	Siberia.................	54 30 N.	73 40 E.	...	8	240 (a)	144
Omady-el-Hamyd...	Nubia	20 40½ N.	30 28 E.	...	14	29	70
Oneida................	New York.............	43 4 N.	75 50 W.	...	10	187	1
Onondaga	New York	42 59 N.	76 6 W.	...	10	177 and 187	3
Ontonagon	Michigan..............	46 52 N.	89 30 W.	...	9	215	1
Onowa	Iowa	42 0 N.	96 11 W.	...	10	70	1
Ooroomiah	Persia..................	37 30 N.	45 10 E.	...	11	215	5
Oporto.................	Portugal	41 10 N.	8 22 W.	278 & 607	10	336	29
Opelika	Alabama...............	32 35 N.	85 30 W.	...	12	115	1
Oran	Algeria.................	35 44 N.	0 41 W.	164	10	199 and 200	6
Orange................	France.................	44 8 N.	4 48 E.	149	10	366 and 368	6
Orange Bay..........	Terra-del-Fuego	55 31 S.	68 2 W.	...	30	27	59
Orangeburg	South Carolina	33 27 N.	80 39 W.	...	12	141	1
Orebro................	Sweden................	59 20 N.	15 10 E.	97	7	75 and 76	10
Oregon................	Missouri...............	39 59 N.	95 10 W.	...	11	80	1
Oregon City	Oregon.................	45 12 N.	122 36 W.	...	9	27 and 28	1 and 2
Orel....................	Russia	52 58 N.	35 39 E.	...	8	226	4 and 36
Orenburg	Russia	51 45 N.	54 54 E.	280	8	237, 238 & 239	80
Orkney Islands......	North Atlantic Ocean	59 N.	2–3½ W.	...	7	35	7 and 21
Orlov	Russia	47 6 N.	35 50 E.	...	9	359	4
Orville	Alabama	32 24 N.	87 6 W.	200	12	115	1
Osage..................	Iowa	43 20 N.	93 0 W.	...	10	80	1
Osborne...............	England	50 45 N.	1 17 W.	172	8	129 and 133	13
Osceola	Illinois.................	41 16 N.	90 17 W.	...	10	104	1
Oshtemo..............	Michigan	42 15 N.	85 30 W.	...	10	116	1
Ostersund	Sweden	63 11 N.	12 22 W.	1050	6	31	10
Oswego	New York.............	43 28 N.	77 34 W.	250	10	172 and 187	1
Otchakof..............	Russia..................	46 37 N.	31 33 E.	...	9	354 and 355	20
Otsego	Michigan..............	42 27 N.	85 40 W.	662	10	116	1

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Otsego	Wisconsin	43° 27′ N.	89° 13′ W.	...	10	100	1
Ottawa	Illinois	44 16 N.	83 25 W.	500	10	106 and 107	1
Ottawas Point	Michigan	5 30 N.	61 10 W.	600	17	118	1 and 79
Otter House	Scotland	56 0 N.	5 20 W.	130	7	31	7
Ottey	England	53 54 N.	1 34 W.	205	8	74 and 80	13
Oum Theboul	Algeria	36 50 N.	8 27 E.	10	11	203	11
Our Village	Guiana	5 30 N.	61 10 W.	...	17	20	1 (?)
Ovid	New York	42 41 N.	76 52 W.	800	10	186 and 187	1
Oviedo	Spain	43 24 N.	5 52 W.	738	10	337 and 343	6, 14 and 29
Ovolau	Fejee Islands	17 47 S.	178 52 W.	...	22	1	59
Owl's Head	Maine	44 2 N.	68 56 W.	...	10	311	9
Oxford	England	51 46 N.	1 15 W.	210	8	104 and 118	13
Oxford	Maine	44 4 N.	70 32 W.	...	10	309	1
Oxford	Mississippi	34 20 N.	89 25 W.	338	12	93 and 94	1
Oxford	North Carolina	36 23 N.	78 14 W.	...	11	145	1
Oxford	New York	42 28 N.	75 32 W.	961	10	181 and 187	3
Oxford	Pennsylvania	39 50 N.	75 51 W.	...	11	151	1
Oyster Bay	New York	40 50 N.	73 41 W.	50	10	273	3
Padang	Sumatra	0 48 S.	100 20 E.	...	19	43 and 45	21
Paddytown	Virginia	39 28 N.	78 55 W.	...	11	126	1
Paderborn	Prussia	51 44 N.	8 44 E.	...	8	172 and 173	21
Padilla	Mexico	24 14 N.	98 54 W.	...	14	7	15
Padua	Italy	45 22 N.	11 50 E.	...	9	307	24
Paducah	Kentucky	37 6 N.	88 36 W.	...	26	97	1
Pago-pago	Navigator's Island	14 S.	170 W.	..	21	4	68
Paisley	Scotland	55 50 N.	4 27 W.	88	7	33	7
Pajutazee	Minnesota	45 0 N.	94 W.	...	9	75	1
Pakerort Light H'se	Russia	59 23 N.	24 3 E.	...	7	78	20
Paldamo	Finland	64 17 N.	27 43 E.	...	6	59	4
Palembang	Sumatra	2 47 S.	102 26 E.	...	19	44 and 45	21
Palestine	Texas	31 40 N.	95 25 W.	480	12	69	1
Palermo	New York	43 19 N.	76 24 W.	...	10	187	1
Palma	Majorca Island	39 33 N.	2 34 E.	...	11	197	29
Palmyra	Missouri	39 50 N.	91 30 W.	...	11	87	1
Palmyra	New York	43 5 N.	77 16 W.	450	10	160	1 and 3
Pana	Illinois	39 24 N.	89 6 W.	735	11	91	1
Panama	New Grenada	9 0 N.	79 36 W.	...	17	17 and 18	6
Paoli	Kansas	38 30 N.	95 30 W.	...	11	72	1
Parana	South America	31 45 S.	60 37 W.	...	25	23	137
Pardeeville	Wisconsin	43 44 N.	89 16 W.	...	10	100	1
Paris	France	48 50 N.	2 20 E.	216	9	116 and 118	6, 21 and 68
Paris	Illinois	39 36 N.	87 42 W.	...	11	93	1
Paris	Kentucky	38 16 N.	84 7 W.	800	11	110	1 and 9
Paris	Missouri	39 30 N.	92 0 W.	700	11	87	1
Parkersville	Pennsylvania	39 54 N.	75 37 W.	...	11	151	1
Parma	Italy	44 50 N.	10 21 E.	...	10	373	21 and 28
Passaic Valley	New Jersey	40 53 N.	74 12 W.	...	10	248	1
Pass Christian	Mississippi	30 20 N.	89 25 W.	...	12	106	2
Pasumlie	Hindoostan	10 1 N.	78 20 E.	...	16	35	68
Paterson	New Jersey	40 55 N.	74 10 W.	...	10	248	1
Patna	Hindoostan	25 40 N.	85 20 E	...	13	87 and 91	30
Patoka	Indiana	38 28 N.	87 26 W.	...	11	99	1
Patten	Maine	46 2 N.	68 34 W.	...	9	78 and 81	1
Pau	France	43 18 N.	0 22 W.	...	10	358 and 362	7
Paulding	Mississippi	32 3 N.	89 10 W.	...	12	99	1
Peach Grove Lodge	Indiana	39 15 N.	81 0 W.	...	11	117	1
Peissenberg	Bavaria	47 47 N.	10 42 E.	...	9	296 and 299	24
Pekin	China	39 54 N.	116 27 E.	...	11	225, 226 & 227	5, 20 & 48 (?)
Pekin	Illinois	40 36 N.	89 45 W.	...	10	101 and 102	1
Pella	Iowa	41 30 N.	92 55 W.	730	10	82	1
Pembina	Minnesota	48 59 N.	96 50 W.	...	9	41 and 42	1
Pembroke	Maine	44 53 N.	67 15 W.	...	10	314	1
Pennsylvania Mine	Michigan	?	?	...	9	57	1
Penfield	Georgia	33 38 N.	83 20 W.	...	12	128	1
Penjinsk Gulf (head of.)	Siberia	62 N.	162 E.	...	6	70	77
Pennville	Indiana	41 30 N.	85 W.	...	10	114	1
Penn Yan	New York	42 42 N.	77 11 W.	740	10	159 and 160	1 and 9
Pensa	Russia	53 10 N.	45 5 E.	...	8	233	16
Pensacola	Florida	30 24 N.	87 10 W.	9	12	119 and 121	1 and 2
Penzance	England	50 2 N.	5 28 W.	...	8	119 and 126	27
Peoria	Illinois	40 36 N.	89 40 W.	460	10	101 and 102	1 and 9
Perry	Georgia	32 28 N.	83 46 W.	...	12	132	1

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Perry	Maine	45° 0′ N.	67° 6′ W.	100	...	313 and 314	1
Perry City	New York	42 30 N.	76 55 W.	...	10	187	1
Perrysburg	Ohio	41 39 N.	83 40 W.	...	10	124 and 125	1
Persian Gulf	....	....	....	...	13	76	129
Perth	Scotland	56 23 N.	3 26 W.	66	7	43	7
Peru	Nebraska	40 29 N.	95 46 W.	...	10	68	1
Peshawur	India	33 58 N.	71 41 E.	...	12	186 & 186 (b)	42 and 142
Peterborough	New Hampshire	42 52 N.	71 58 W.	...	10	281	9
Petite Coquille	Louisiana	30 10 N.	89 38 W.	...	12	90 and 92	2
Petropaulovski	Kamschatka	53 0 N.	158 40 E.	...	8	248	4 and 110
Petrozavodsk	Russia	61 47 N.	34 24 E.	...	6	60	4
P. H. Academus	Mississippi	?	?	...	11	99	1
Phantom Hill	Texas	32 30 N.	99 45 W.	...	12	53	2
Philadelphia	Pennsylvania	39 57 N.	75 11 W.	...	11	151	8 and 95
Philadelphia (Girard College.)	Pennsylvania	39 58 N.	75 11 W.	...	11	152	132
Philadelphia (High School.)	Pennsylvania	39 57 N.	75 11 W.	50	11	132 and 151	1
Philadelphia (Navy Yard.)	Pennsylvania	39 55 N.	75 9 W.	...	11	151	1 and 9
Philomath	Georgia	33 45 N.	83 15 W.	...	12	127 and 128	1
Phœnixville	Pennsylvania	40 10 N.	75 26 W.	120	10	196	1
Piasa Farms	Illinois	39 0 N.	90 30 W.	...	11	90 and 91	1
Piedmont	Virginia	38 54 N.	77 57 W.	...	11	126	1
Pieter Maritzburg	Natal, South Africa	29 23 S.	30 20 E.	2096	24	38	14
Pilatka	Florida	29 38 N.	81 45 W.	...	13	42	1
Pillau	Prussia	54 38 N.	20 20 E.	...	8	215	68
Pilsen	Bohemia	49 45 N.	13 21 E.	...	9	327 and 330	22
Pine Hill	New York	42 45 N.	79 6 W.	680	10	160	1
Pitea	Sweden	65 19 N.	21 30 E.	...	5	24	10
Pittsburg	Pennsylvania	40 32 N.	80 2 W.	960 & 850	10	140, 143 & 144	1 and 8
Pittsfield	Massachusetts	42 27 N.	73 15 W.	...	10	260	1
Platta	Switzerland	46 39 N.	8 50 E.	...	9	225 and 237	72
Pleasanton	Michigan	44 25 N.	86 10 W.	750	10	118	1
Plains	Virginia	38 50 N.	77 51 W.	...	11	126	1
Plainville	New York	43 0 N.	77 15 W.	...	10	186 and 187	1
Platteville	Wisconsin	42 45 N.	90 45 W.	...	10	93	1
Plattsburg	New York	44 40 N.	73 25 W.	300	10	204, 206 & 209	1 and 3
Plattsburg Barracks	New York	44 41 N.	73 26 W.	...	10	205, 206 & 209	2
Pleasant Plain	Iowa	41 7 N.	91 54 W.	950	10	90 and 91	1
Pleasant Valley Mills	Kentucky	38 10 N.	83 49 W.	...	11	110	1
Plover Bay	near Behring Strait	64 24 N.	173 30 W.	...	6	2	82
Plymouth	Connecticut	41 40 N.	73 3 W.	...	10	267	1
Plymouth	Indiana	41 19 N.	86 12 W.	...	10	111	68
Plymouth	Wisconsin	43 44 N.	88 7 W.	...	10	97	1
Plymouth Meeting	Pennsylvania	40 10 N.	76 10 W.	...	10	196	1
Pocopson	Pennsylvania	39 54 N.	75 37 W.	218	11	132 and 151	1
Point Coupee	Louisiana	30 42 N.	91 30 W.	...	12	89	1
Point-de-Galle	Ceylon	6 3 N.	80 18 E.	...	17	39 and 41	34
Point Judith	Rhode Island	41 23 N.	71 31 W.	...	10	289	9
Point San Jose	California	37 48 N.	122 25 W.	...	11	26	2
Polaris Bay	Arctic Ocean	81 38 N.	61 44 W.	...			
Polytechnic School.	Portugal	38 43 N.	9 8 W.	...	11	181	92
Poltava (See Pultava.)							
Pomfret	Connecticut	41 52 N.	72 0 W.	587	10	266 and 267	1
Pomona Gardens	New Jersey	40 1 N.	75 3 W.	83	10	248	1
Pomona	Tennessee	36 0 N.	85 0 W.	2200	11	112	1
Pompey	New York	42 56 N.	76 5 W.	1745	10	178 and 187	1 and 3
Pompey Hill	New York	42 52 N.	76 9 W.	1737	10	186 and 187	1
Pontiac	Michigan	42 36 N.	83 14 W.	...	10	123	1
Ponts-de-Martel	Switzerland	47 0 N.	6 50 E.	...	9	177 and 178	72
Poplar Grove	Virginia	39 17 N.	78 2 W.	720	11	125 and 126	1
Port Albert	Australia	38 39 S.	146 40 E.	30	26	84	18
Porrentruy	Switzerland	47 25 N.	7 5 E.	...	9	179 and 196	72
Port Angelos	Washington	48 23 N.	124 44 W.	...	9	16	1
Port Arlington	Ireland	53 9 N.	7 12 W.	...	8	36 and 39	25
Port Arthur	Van Diemen's Land	43 10 S.	147 54 E.	55	27	67	14 and 107
Port Blair	Andaman Islands	11 41 N.	92 42 E.	...	16	41	17
Port Bowen	Arctic Ocean	73 14 N.	88 55 W.	10	4	11	102
Port Carbon	Pennsylvania	40 43 N.	76 6 W.	...	10	196	8
Port Clarence	Russian America	65 6 N.	166 58 W.	10	5	....	110

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Port-de-France	New Caledonia	22° 16′ S.	166° 26′ E.	22	23	55	6
Port Deposit	Maryland	39 38 N.	76 3 W.	...	11	131	1
Port Foulke	Greenland	78 18 N.	73 0 W.	6	3	6	97
Port Gibson	Mississippi	31 51 N.	91 2 W.	100	12	101 and 102	1 and 9
Port Huron	Michigan	42 53 N.	82 24 W.	606	10	....	1
Port Kennedy	North Somerset	72 1 N.	94 14 W.	10	4	10	97
Portland	Australia	38 20 S.	141 36 E.	37	26	73 and 77	18
Portland	Maine	43 38 N.	70 17 W.	87	10	309	1
Port-la-Vaca	Texas	28 40 N.	96 45 W.	25	13	20	1
Port Louis	Falkland Islands	51 32 S.	58 7 W.	10	29	27	108 and 116
Port Louis	Mauritius	20 9 S.	57 29 E.	...	23	43	6
Port Lloyd	Bonin Islands	27 6 N.	142 12 E.	...	13	96	5
Porto Cabello	Venezuela	10 28 N.	68 17 W.	...	16	8 and 12	9
Port Orange	Florida	29 N.	81 W.	...	13	44 and 45	1
Port Praya	Cape Verd Islands	14 13 N.	23 30 W.	115	16	24 (*a*)	137
Port of Spain	Trinidad	10 39 N.	61 34 W.	16	16	13	1
Port Refuge	Arctic Ocean	75 31 N.	92 10 W.	...	3	3	109
Portree	Scotland	57 25 N.	6 11 W.	50	7	24 and 25	7
Portrush	Ireland	55 13 N.	6 41 W.	...	7	14 and 16	25
Port Said	Egypt	31 18 N.	32 18 E.	...	12	176 (*b*)	137
Port Townsend	Washington	48 7 N.	122 44 W.	...	9	16	1
Portsoy	Scotland	57 42 N.	2 42 W.	...	7	29	7
Portsmouth	New Hampshire	43 4 N.	70 46 W.	...	10	281	1
Portsmouth	Ohio	38 50 N.	82 49 W.	468	11	114 and 115	1
Portsmouth	Virginia	36 50 N.	76 19 W.	12	11	142 and 143	1
Posen	Poland	52 24 N.	16 51 E.	287	8	210	33
Possiet Bay	Siberia	....	....	...	10	400 (*a*)	126
Poti	Russia	41 10 N.	41 30 E.	...	10	387 (*a*)	126
Potsdam	New York	44 40 N.	75 1 W.	394	10	201 and 209	3
Pottsville	Pennsylvania	40 41 N.	76 9 W.	...	10	195 and 196	1 and 8
Pouce	Porto Rico	17 51 N.	66 40 W.	...	15	16 and 18	9
Poughkeepsie	New York	41 45 N.	74 0 W.	150	10	236 and 243	3
Poultney	Iowa	41 40 N.	91 21 W.	...	10	88 and 89	1
Powelton	Georgia	33 24 N.	82 51 W.	...	12	128	1
Powhatan Hill	Virginia	?	?	...	11	126	1
Poydras College	Louisiana	30 42 N.	91 30 W.	...	12	89	1
Prague	Bohemia	50 4 N.	14 23 E	660	8	205	21, 22, 24, 46 [&136
Prairie Bluff	Alabama	32 8 N.	87 33 W.	...	12	115	1
Prairie-du-Chien	Wisconsin	43 3 N.	90 53 W.	...	10	92 and 93	2
Prairie Line	Mississippi	32 3 N.	89 5 W.	...	12	99	1
Prattsburg	New York	42 34 N.	79 20 W.	1494	10	156 and 160	3
Prescott	Wisconsin	44 56 N.	92 40 W.	800	10	84, 85, 86 & 87	1
Presidio of San Fran- [cisco.	California	37 48 N.	122 26 W.	...	11	24 and 26	1 and 2
Presque Isle	Michigan	45 18 N.	83 30 W.	...	9	65	9
Preston	Texas	33 47 N.	96 35 W.	...	12	67	1
Prince Edward's C't [House	Virginia	37 13 N.	78 30 W.	...	11	120	1
Prince George's C't [House	Virginia	37 15 N.	77 12 W.	...	11	142 and 143	68
Princeton	Massachusetts	42 28 N.	71 53 W.	1113	10	295 and 296	1
Princeton	Minnesota	45 50 N.	93 45 W.	...	9	46 and 47	1
Progress	New Jersey	40 3 N.	75 11 W.	...	10	248	1
Prospect Hill	Kentucky	38 36 N.	83 31 W.	...	11	110	1
Prospect Hill	North Carolina	36 24 N.	79 20 W.	...	11	124	1
Providence	Rhode Island	41 49 N.	71 25 W.	120 & 170	10	286 and 289	1, 68 & 97
Provincetown	Massachusetts	42 2 N.	70 11 W.	...	10	303	68
Puerto Monti	Chili	41 30 S.	72 52 W.	33	27	17 (*a*)	137
Pultava	Russia	49 35 N.	34 36 E.	...	9	357	4 and 16
Punta Arenas	Patagonia	53 12 S.	70 56 W.	...	29	26½	137
Purglitz	Bohemia	50 2 N.	13 52 E.	...	8	201 and 204	22
Putbus	Prussia	54 21 N.	13 30 E.	173	8	198	21
Puy	France	45 3 N.	3 53 E.	...	9	127 and 138	6
Qoubouchi	Nubia	17 57 N.	34 3 E.	...	15	30	70
Quasqueton	Iowa	42 23 N.	91 43 W.	890	10	88 and 89	1
Quebec	Canada East	46 59 N.	71 16 W.	230	9	72 and 73	95
Queretaro	Mexico	20 8 N.	100 0 W.	...	14	7	15
Quincy	Illinois	39 55 N.	91 28 W.	...	11	91	1
Race Point	Massachusetts	42 4 N.	70 15 W.	...	10	303	68
Racine	Wisconsin	42 49 N.	87 40 W.	...	10	99 and 100	1
Ragusa	Dalmatia	42 38 N.	17 39 E.	...	10	378	22

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Raimsk (See Aralskoe.)	Turkestan						
Raleigh	North Carolina	35° 47′ N.	78° 48′ W.	317	11	124	1
Rampoor	Hindoostan	31 27 N.	77 38 E.	...	12	187	89
Rancho-del-China	California	34 0 N.	117 26 W.	...	12	10 and 12	2
Rancho-del-Jurupa	California	34 10 N.	117 5 W.	...	12	10 and 12	2
Randolph	Pennsylvania	41 28 N.	80 10 W.	1720	10	137 and 138	1
Randolph	Vermont	43 57 N.	72 36 W.	...	10	256	1
Randolph Macon Col.	Virginia	37 13 N.	78 30 W.	...	11	143	1
Raneekhet	India	26 0 N.	76 30 W.	...	13	78 (*b*)	23
Ras el Gartoum	Nubia	15 37 N.	32 38 E.	...	15	30	70
Rathousen	Switzerland	47 5 N.	8 20 E.	...	9	212 and 237	72
Ratisbon	Bavaria	48 58 N.	12 6 E.	...	9	302 and 304	24
Ravenna	Ohio	41 12 N.	81 16 W.	1100	10	129	1 and 9
Rawalpindi	India	34 4 N.	73 5 E.	...	12	186 (*a*) & 186 [(*b*)	142
Rayado	New Mexico	36 27 N.	104 55 W.	...	11	50	2
Readington	New Jersey	40 33 N.	74 40 W.	...	10	248	1
Reading	Pennsylvania	40 19 N.	75 56 W.	263	10	195 and 196	1 and 8
Reckigen	Switzerland	46 28 N.	8 20 E.	...	9	216 and 237	72
Red Hook	New York	42 2 N.	73 56 W.	150	10	238 and 243	3
Redford Centre	Michigan	42 28 N.	83 10 W.	...	10	123	1
Red Lake	Minnesota	48 30 N.	95 30 W.	...	9	41 and 42	1
Redout Kaleh	Russia	42 16 N.	41 24 E.	...	10	388	20, 65
Red River Settlement	Hudson's Bay Terr.	50 6 N.	97 0 W.	853	8	15 and 16	1 and 9
Red Sea	...	15 to 25 N.	35 to 43 E.	...	14, 15	30, 31	35
Red Wing	Minnesota	44 35 N.	92 30 W.	...	10	77 and 87	1
Regensburg. (See Ratisbon.)							
Reichenau	Switzerland	46 49 N.	9 20 E.	...	9	251 and 273	72
Reikiavik	Iceland	64 9 N.	21 50 W.	10	6	16, 17, 18 & 19	7, 37, 68 & 74
Remus	Switzerland	46 50 N.	10 20 E.	...	9	271 and 273	72
Rensselaer	Indiana	40 57 N.	87 9 W.	...	10	111	1 and 9
Rensselaer Bay	Greenland	78 37 N.	70 53 W.	...	3	7	97
Republic	Ohio	41 8 N.	83 4 W.	...	10	125	1
Reval	Russia	59 26 N.	24 49 E.	...	7	84 and 85	4, 16 & 20
Rhinebeck	New York	41 55 N.	73 55 W.	...	10	243	1 and 9
Rhineland	Missouri	38 46 N.	91 46 W.	300	11	87	1
Riceville	New Jersey	40 24 N.	73 59 W.	...	10	248	1
Richmond	Indiana	39 47 N.	84 46 W.	800	11	100 and 101	1
Richmond	Massachusetts	42 23 N.	73 20 W.	1190	10	259 and 260	1
Richmond	Missouri	39 12 N.	93 56 W.	...	11	80	1
Richmond	Virginia	37 32 N.	77 27 W.	...	11	143	1
Richmond Hill	Georgia	33 30 N.	82 0 W.	...	12	140 and 141	1
Ridge	Maryland	38 5 N.	76 18 W.	...	11	138	1
Ridge Farm	Illinois	?	?	...	11	93	1
Ridgeway	Kansas	39 2 N.	95 11 W.	...	11	71	1
Riga	Russia	56 57 N.	24 0 E.	20	7	80, 81 & 82	4, 20 & 36
Rigikulm.	Switzerland	4 73 N.	8 35 E.	...	18	218 and 237	72
Rigolet	Labrador	54 35 N.	56 21 W.	...	8	18	1
Riley	Illinois	42 8 N.	88 33 W.	760	10	106 and 107	1
Ringgold Barracks	Texas	26 23 N.	98 42 W.	521	13	22	2
Rio Grande	New Jersey	39 16 N.	74 42 W.	...	11	153, 154 & 155	1
Rio Grande City	Texas	26 25 N.	98 55 W.	...	13	8	15
Rio Janeiro	Brazil	23 0 S.	43 14 W.	224	23	18	59 and 116
Ripley	Ohio	38 47 N.	83 31 W.	...	11	108 and 109	1
Ripon	England	54 8 N.	1 30 W.	146	8	64 and 66	13
Ripon	Wisconsin	43 54 N.	88 59 W.	...	10	100	1
Rochelle	Illinois	?	?	...	10	107	1
Rochester	New York	43 8 N.	77 51 W.	525	10	155 and 160	1, 3 and 31
Rochester	Minnesota	44 0 N.	92 26 W.	...	10	77	1
Rock Bluffs	Nebraska	40 54 N.	95 54 W.	...	10	68	1
Rock Island	Illinois	41 28 N.	90 33 W.	...	10	103 and 104	2
Rockport	Missouri	38 55 N.	92 38 W.	...	11	80	1
Rockport	Ohio	41 31 N.	81 53 W.	...	10	129	1
Rockville	Indiana	39 46 N.	87 6 W.	1100	11	99	1
Rockville	Utah	37 20 N.	113 40 W.	...	11	37	1
Rocky Run	Wisconsin	43 26 N.	89 19 W.	...	10	100	1
Rodez	France	44 21 N.	2 34 E.	...	10	363 and 368	6
Rolfe	Iowa	42 50 N.	94 34 W.	1000	10	70	1
Rolla	Missouri	37 58 N.	91 33 W.	...	11	89	1
Rome	Italy	41 54 N.	12 29 E.	163	10	375 and 377	14, 21 and 24
Romeo	Michigan	42 44 N.	83 0 W.	730	10	122 and 123	1
Romney	Virginia	39 21 N.	78 53 W.	...	11	126	1

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Roorkee	India	29° 52′ N.	77° 57′ E.	880	13	80 and 80(a)	14 and 23
Rose Cottage	Pennsylvania	41 7 N.	79 9 W.	...	10	138	8 and 9
Rose Hill	Virginia	38 0 N.	76 57 W.	250	11	142 and 143	1
Rosetta	Egypt	31 25 N.	30 28 E.	...	12	176	35
Rossville	Iowa	43 10 N.	91 21 W.	1400	10	88 and 89	1
Rouen	France	49 26 N.	1 5 E.	...	9	108 and 109	6
Rougemont	Virginia	38 5 N.	78 21 W.	450	11	118 and 119	1
Round Top	Texas	30 6 N.	96 37 W.	...	12	72	1
Rouse's Point	New York	45 0 N.	73 21 W.	...	9	207 and 209	2
Rousses	France	47 10 N.	6 45 E.	...	9	159 and 161	11
Roxbury	Massachusetts	42 21 N.	71 4 W.	...	10	296	1
Royston	England	52 2 N.	0 12 E.	269	8	90 and 94	13
Rumford Point	Maine	44 30 N.	70 40 W.	...	10	311	1
Rupert	Vermont	43 15 N.	73 11 W.	750	10	255 and 256	1
Rural	Wisconsin	44 20 N.	89 5 W.	...	10	97	1
Russell	New Zealand	35 10 S.	174 22 E.	...	26	88	27 and 56
Russell's Station	Ohio	39 13 N.	83 36 W.	...	11	109	1
Russellville	Kentucky	36 48 N.	86 45 W.	...	11	....	1
Rustenberg	Surinam	5 N.	55 W.	...	17	23 and 24	1
Rutherfordton	North Carolina	35 24 N.	81 50 W.	...	11	121	1
Ruthven	Virginia	37 21 N.	77 33 W.	...	11	143	1
Rutland	Vermont	43 37 N.	72 58 W.	...	10	253 and 256	1 and 95
Ryslinge	Denmark	55 14 N.	10 39 E.	...	7	61 (b)	139
Saccarappa	Maine	43 43 N.	70 25 W.	...	10	309	1
Sackett's Harbor	New York	43 55 N.	75 27 W.	...	10	209	1
Saco	Maine	43 31 N.	70 26 W.	...	10	304 and 309	5 and 31
Sacramento	California	38 35 N.	121 28 W.	41 & 81	11	18, 19 & 21	1
Sagan	Prussian Silesia	51 42 N.	15 22 E.	...	8	209	24 (?)
Sag Harbor	New York	41 0 N.	72 20 W.	40	10	272 and 273	1
Sagritz	Austria	46 58 N.	12 52 E.	...	9	315 and 320	22
Sahara Desert	Africa	30 to 33 N.	0 to 1 W.	...	12	169, 170 & 171	6
Saint Andex	Bavaria	47 58 N.	11 12 E.	...	9	295 and 296	24
Saint Anna	Philippine Islands	14 6 N.	121 0 E.	...	16	46	17
Saint Anne	Canada East	47 24 N.	70 5 W.	...	9	74	1
Saint Anthony's F'lls	Minnesota	44 49 N.	93 10 W.	...	10	48 and 49	1
Saint Augustine	Florida	29 48 N.	81 35 W.	8	13	33, 38 & 42	1 and 32
Saint Bernard	Switzerland	45 50 N.	7 6 E.	8150	9	240 and 248	6, 11, 21 & 45
Saint Cloud	Minnesota	45 45 N.	94 23 W.	...	9	47	1
Saint Croix	Switzerland	46 49 N.	6 35 E.	...	9	168 and 178	72
Saint Dennis	Bourbon	20 52 S.	55 30 E.	142	23	42	6
Saint Domingo	West Indies	18 20 N.	70 0 W.	...	15	15 and 18	1
Saint Foy	France	45 44 N.	4 49 E.	...	9	134 and 138	11
Saint Francis Xavier [College.	New York	40 44 N.	73 59 W.	104	10	253	1
Saint Gallen	Switzerland	47 26 N.	9 20 E.	...	9	249 and 273	72
Saint Georges	Bermuda	32 23 N.	64 40 W.	...	12	152	1
Saint Georges	Utah	37 11 N.	114 0 W.	...	11	37	1
Saint Gothard	Switzerland	46 33 N.	8 35 E.	6970	9	232, 233, 236 & [237	24 and 72
St. Helena	South Atlantic Ocean	15 55 S.	5 54 W.	40	22	30	14
Saint Hyppolite	France	43 54 N.	3 55 E.	...	10	365 and 368	6
Saint Imier	Switzerland	47 9 N.	7 5 E.	...	9	204 and 237	72
Saint Inigoes	Maryland	38 11 N.	76 27 W.	45	11	138	1
Saint James	Michigan	45 44 N.	85 27 W.	598	9	64 and 65	1
Saint John's	New Brunswick	45 14 N.	66 3 W.	...	9	82	1
Saint John's	Newfoundland	45 35 N.	52 39 W.	170	9	86 and 87	1 and 5
Saint John's	South Carolina	33 N.	80 W.	...	12	140 and 141	1
Saint Johnsbury	Vermont	44 25 N.	72 0 W.	540	10	252	1
Saint Joseph's	Minnesota	48 55 N.	97 0 W.	...	9	41 and 42	1
Saint Joseph	Missouri	39 40 N.	94 40 W.	...	11	80 and 82	1
Saint Laurent	France	45 46 N.	4 30 E.	...	9	132 and 138	11
Saint Lo	France	49 7 N.	1 4 W.	...	9	102 and 110	6
Saint Lorenzen	Austria	46 12 N.	12 46 E.	...	9	85 and 86	22
Saint Louis	Missouri	38 37 N.	90 16 W.	481	11	85, 86 & 87	1 and 9
Saint Louis Arsenal	Missouri	38 40 N.	90 5 W.	...	11	84 and 87	2
Saint Martin's	Canada	45 32 N.	73 36 W.	118	9	66 and 67	1
Saint Martin's Cove	Terra-del-Fuego	55 51 S.	67 32 W.	...	30	28	108 and 116
Saint Mary's	Azores	37 0 N.	24 59 W.	...	11	172 and 174	32 (?)
Saint Mary's	Iowa	41 11 N.	95 37 W.	...	10	71 and 72	1
Saint Mary's	Maryland	38 10 N.	76 41 W.	45	11	138	1
Saint Mary's	Pennsylvania	41 25 N.	78 45 W.	...	10	138	
Saint Mary's College	Kentucky	37 38 N.	85 10 W.	...	11	104	9
Saint Michael's	Alaska	63 29 N.	161 45 W.	...	6	3 and 6½	5
Saint Michael's	Azores	37 40 N.	25 50 W.	...	11	169, 174 & 175	14

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
Saint Nicolai	Denmark	55° 4′ N.	14° 49′ E.	...	7	6 3 (c)	139
Saint Nizier	France	46 2 N.	4 28 E.	...	9	140 and 148	11
Saint Paul	Illyria	46 43 N.	14 52 E.	...	9	319 and 320	22
Saint Paul	Bourbon Isle	21 4 S.	55 14 E.	...	23	40	6
Saint Paul	Minnesota	44 57 N.	93 5 W.	...	10	77	1
Saint Peter	Austria	47 2 N.	13 34 E.	...	9	316 and 320	22
Saint Peter	Bourbon	21 S.	55 30 E.	...	23	41	6
Saint Petersburg	Russia	59 57 N.	30 20 E.	10	7	90	4, 16 & 20
Saint Rambert	France	45 37 N.	5 26 E.	1017	9	137 and 138	6 and 14
Saint Theresa	Mexico	25 17 N.	98 (?) W.	...	13	6 and 8	15
Saint Vittore	Switzerland	46 54 N.	9 5 E.	...	9	229 and 237	72
Saint Leno	Italy	44 50 N.	10 (?) E.	...	10	372	24
Salamanca	Spain	40 58 N.	5 4 W.	2671	10	344 and 349	29
Salem	New Jersey	39 34 N.	75 27 W.	...	11	115	1
Salem	New York	43 5 N.	73 3 W.	...	10	190, 223 & 227	3
Salem	Oregon	44 55 N.	122 45 W.	...	10	28	1
Salem	Virginia	39 20 N.	80 1 W.	1100	11	120	1
Salem High School	Mississippi	31 3 N.	88 55 W.	...	12	102	1
Salisbury	Connecticut	42 0 N.	73 18 W.	...	10	261 and 267	5
Salmon Falls	New Hampshire	43 12 N.	71 0 W.	...	10	276 and 277	1
Saltillo	Mexico	25 20 N.	101 30 W.	...	13	6 and 8	15
Salt Ponds Isle	Florida	24 33 N.	81 48 W.	16	14	11 and 14	1
Salzburg	Austria	47 48 N.	12 57 E.	...	9	324 and 326	22
Samara	Russia	53 12 N.	50 13 E.	...	8	235½	80
Samarskaja	Russia	51 5 N.	46 50 E.	...	8	235	4
San Antonio	Texas	29 25 N.	98 25 W.	600	13	13 and 15	2 and 15
San Catalina	Mexico	21 (?) N.	101 (?) W.	...	14	7	15
Sandhurst	Australia	36 43 S.	144 21 E.	778	26	72 and 77	18
San Diego	California	32 42 N.	117 14 W.	150	12	11 and 12	2, 32, 71 & [73
Sandosund	Norway	59 5 N.	10 1 E.	41	7	55	19
Sands Point	New York	40 51 N.	73 49 W.	...	10	273	9
Sandusky	Ohio	41 27 N.	82 42 W.	...	10	125	9
Sandwich	Illinois	41 39 N.	88 43 W.	575	10	2	1
Sandwich	Massachusetts	41 45 N.	70 30 W.	...	10	107	1
Sandwick	Orkney Islands	59 2 N.	3 18 W.	94	7	34 and 35	7
Sandy Lake	Minnesota	46 40 N.	93 0 W.	...	9	51	1
Sandy Springs	Maryland	39 10 N.	77 1 W.	...	11	131	1
San Est Ysidro	West Indies	18 N.	67 W.	...	15	18	1
San Felipe	Texas	29 57 N.	96 15 W.	...	13	27	15
San Fernando	Spain	36 25 N.	6 15 W.	...	11		
San Francisco	California	37 48 N.	122 27 W.	130	11	21, 25 & 26	1, 32, 71 & 73
San Francisco	Mexico	25 47 N.	97 32 W.	...	13	6 and 8	15
Sanilac	Michigan	43 22 N.	82 31 W.	604	10	118	75
San José	Costa Rica	9 54 N.	84 6 W.	...	17	12 and 13	1, 137
San Juan Bautiste	Mexico	17 47 N.	92 46 W.	...	15	12	1
San Juan Island	Washington	....	....	...	...	13 and 16	2
San Lorenzo	Austria	45 22 N.	13 42 E.	...	9	322½	22
San Louis Potosi	Mexico	22 0 N.	100 40 W.	...	14	7	15
San Louis Rey	California	33 13 N.	117 25 W.	...	12	12	2
San Miguelito	Mexico	20 N.	99 W.	...	14	7	15
San Nicolas	Mexico	25 (?) N.	98 (?) W.	...	13	6 and 8	15
San Patricio	Texas	27 55 N.	97 50 W.	...	13	23	1
Santa Anna (See Saint Anna.)							
Santa Barbara	California	34 35 N.	119 40 W.	20	12	8 and 12	1
Santa Catalina Island	California	33 26 N.	118 30 W.	...	12	12	2
Santa Clara	California	37 19 N.	122 0 W.	100	11	26	1
Santa Fe	New Mexico	35 41 N.	106 2 W.	...	11	44 and 46	2
Santa Maria	Mexico	25 30 N.	101 (?) W.	...	13	6 and 8	15
Santender	Mexico	23 50 N.	98 45 W.	...	14	7	15
Santiago	Chili	33 26 S.	70 38 W.	1900	25	31	132
Santiago	Spain	42 52 N.	8 23 W.	1896	10	333 and 335	29
Saragossa	Spain	41 44 N.	0 50 W.	604	10	350 and 354	29
Saratoga	New York	40 6 N.	74 0 W.	306	10	226 and 227	1
Saratov	Russia	51 31 N.	45 52 E.	...	8	234	4, 38 and 65
Sargans	Switzerland	47 3 N.	9 35 E.	...	9	257 and 273	72
Saugatuck	Michigan	42 30 N.	85 50 W.	...	10	115 and 116	1
Sauk Centre	Minnesota	45 36 N.	95 12 W.	...	9	47	1
Sault Saint Marie (Fort Brady.)	Michigan	46 28 N.	84 23 W.	...	9	63 & 65	2
Savannah	Georgia	32 5 N.	81 7 W.	42	12	129 (a), 131 & [132	1, 5 & 31
Savannah	Ohio	41 12 N.	82 34 W.	1098	10	128 and 129	1

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Sawel	Ireland	54° 49′ N.	7° 2′ W.	...	8	33	26
Saybrook	Connecticut	41 18 N.	72 20 W.	10	10	266 and 267	1
Saybrook	Ohio	41 48 N.	80 53 W.	...	10	129	1
Schaffhausen	Switzerland	47 42 N.	8 35 E.	...	9	188 and 196	72
Schenectady	New York	42 48 N.	73 55 W.	300	10	216 and 227	1 and 3
Schœndorff	Saxony	51 1 N.	13 40 E.	...	8	194	40
Schœnthal	Bohemia	50 5 N.	13 0 E.	...	8	199 and 204	28
Schœssl	Bohemia	50 27 N.	13 30 E.	...	8	200 and 204	22 and 68
Schuls	Switzerland	46 48 N.	10 20 E.	...	9	272 and 273	72
Schussenreid	Wurtemberg	48 1 N.	9 40 E.	...	9	283	28
Schwarzenburg	Switzerland	46 49 N.	7 20 E.	...	9	198 and 237	72
Schwyz	Switzerland	47 1 N.	8 35 E.	...	9	219 and 237	72
Scioto	Ohio	38 40 N.	82 49 W.	468	11	114 and 115	1
Scourie	Scotland	58 22 N.	5 8 W.	26	7	27	7
Scuppernong	North Carolina	35 50 N.	78 30 W.	...	11	145	1
Seaville	New Jersey	39 20 N.	74 40 W.	...	11	155	1
Sebastopol	Russia	44 37 N.	33 29 E.	...	10	382 and 385	20
Seelau	Bohemia	49 32 N.	15 11 E.	...	9	332 and 334	22
Seetapore	India	?	?	...	13	89	23
Selimeh	Nubia	21 14 N.	29 49 E.	...	14	29	70
Selma	Alabama	32 25 N.	87 4 W.	200	12	115	1
Semipalatinsk	Siberia	50 50 N.	80 5 E.	...	8	241	58 and 20
Senftenberg	Bohemia	50 5 N.	16 25 E.	...	8	207 and 208	22
Seneca Falls	New York	42 54 N.	76 51 W.	...	10	167 and 168	1
Sennar	Nubia	13 37 N.	33 45 E.	...	16	25	70
Sennett	New York	43 0 N.	76 55 W.	...	10	186 and 187	1
Sergeantsville	New Jersey	40 29 N.	75 3 W.	...	11	247 and 248	1
Seringapatam	India	12 25 N.	76 48 E.	...	16	33	27
Setif	Algeria	35 47 N.	5 27 E.	...	11	202	6 and 21
Sevastopol (See Sebastopol.)							
Seville	Florida	30 29 N.	84 7 W.	...	12	121	1
Seville	Ohio	39 59 N.	81 47 W.	...	11	129	1
Seville	Spain	37 23 N.	6 4 W.	295	11	185 and 190	29
Sewickleyville	Pennsylvania	40 27 N.	80 9 W.	...	10	144	1
Shamokin	Pennsylvania	40 45 N.	76 31 W.	700	10	195 and 196	1
Shanghae	China	31 19 N.	121 26 E.	15	12	189	1 (?)
Sharonville	Ohio	33 12 N.	84 35 W.	800	12	109	1
Shawneetown	Illinois	37 42 N.	88 12 W.	...	11	93	1 and 9
Shelburne	New Hampshire	44 23 N.	71 6 W.	700	10	276 and 277	1
Shelburne	Vermont	44 23 N.	73 0 W.	150	10	251 and 252	1
Shelby Bay	Bermuda	32 28 N.	64 32 W.	...	12	....	1
Shelbyville	Indiana	39 30 N.	85 43 W.	...	11	101	1
Sherburne	New York	42 39 N.	75 32 W.	...	12	276 and 277	1
Sheriff's Harbor	Boothia Felix	70 2 N.	91 52 W.	...	4	89	103
Shirleysburg	Pennsylvania	40 17 N.	77 48 W.	...	10	167	1
Shreveport	Louisiana	32 30 N.	93 43 W.	...	12	85	1
Shurukhs	Turkestan	36 25 N.	61 10 E.	...	11	222	119
Sialkote	India	32 29 N.	74 35 E.	...	12	186(*d*)&186(*h*)	142
Sibley	Minnesota	44 31 N.	94 26 W.	...	10	75	1
Sidmouth	England	50 41 N.	3 13 W.	30	8	125 and 126	13 and 27
Sidney	Ohio	40 21 N.	84 11 W.	...	10	124 and 125	1
Silkeborg	Denmark	56 10 N.	9 33 E.	...	7	59 (*a*)	139
Silloth	England	54 52 N.	3 23 W.	28	8	62 and 66	13
Sils	Switzerland	46 26 N.	9 50 E.	...	9	267 and 273	72
Silver Lake	Pennsylvania	41 55 N.	76 1 W.	...	10	188 and 190	8
Silver Springs	Pennsylvania	40 5 N.	76 45 W.	...	10	195 and 196	1
Simferopol	Russia	44 57 N.	34 6 E.	...	10	383, 384 & 385	4 and 17
Simoda	Japan	34 35 N.	138 31 E.	...	12	193	79
Simplon	Switzerland	46 15 N.	8 5 E.	...	9	245 and 248	72
Singapore	India	1 42 N.	103 45 E.	50	18	33	14 and 9
Sing-Sing	New York	41 9 N.	73 47 W.	...	10	243	1
Singue	Abyssinia	10 30 N.	34 41 E.	...	16	26	70
Sion	Switzerland	46 14 N.	7 20 E.	..	9	241 and 248	72
Sioux City	Iowa	42 31 N.	96 25 W.	1258	10	69 and 70	1
Sir Daria, Valley of	Turkestan	....	....	...	9	373	16
Sisterdale	Texas	29 54 N.	98 35 W.	1320	13	15	1
Sisterville	Virginia	39 33 N.	80 54 W.	...	11	116 and 117	1
Sitka	Russian America	57 3 N.	135 25 W.	20	7	11	1 and 4
Siwah	Egypt	26 12 N.	25 58 E.	...	13	72	70
Skaarupgaard	Denmark	56 15 N.	10 13 E.	...	7	59 (*c*)	139
Skagen	Denmark	57 38 N.	10 20 E.	...	7	51 and 60	47 (?)
Skara	Sweden	58 23 N.	13 27 E.	...	7	77	10

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Skeneateles	New York	43° 0′ N.	76° 30′ W.	...	10	187	1
Skudesnaes	Norway	59 8 N.	4 47 E.	37	7	50	19
Slaadberg	Spitzbergen	77 29 N.	14 41 E.	...	3	13	37
Slieve Donard	Ireland	54 12 N.	5 55 W.	...	8	33	26
Slieve League	Ireland	54 39 N.	8 42 W.	...	8	33	26
Slieve Snaght	Ireland	55 12 N.	7 20 W.	...	7	23 and 25	26
Sloansville	New York	42 42 N.	74 30 W.	...	10	227	1
Slobodsk	Russia	58 35 N.	50 9 E.	...	7	109 and 111	16
Slogarie	Scotland	54 59 N.	4 8 W.	300	8	51	7
Smeaton	Scotland	?	?	100	7	43	7
Smecna	Bohemia	50 11 N.	14 0 E.	...	8	202 and 204	22
Smidstrup	Denmark	55 46 N.	9 33 E.	...	7	58	14
Smithfield	Ohio	40 20 N.	80 38 W.	...	10	129	1
Smithfield	Virginia	36 50 N.	76 41 W.	100	11	142 and 143	1
Smithsonian Inst'n.	Washington, D. C.	38 53 N.	77 1 W.	60	11	137 and 138	1
Smithport	Pennsylvania	41 54 N.	78 33 W.	...	10	161 and 162	8
Smithville	New York	44 0 N.	76 1 W.	...	10	202 and 209	1
Smithville	Ohio	40 52 N.	81 1 W.	...	10	129	1
Smolensk	Russia	54 47 N.	32 3 E.	...	8	223	36
Smyrna	Asia Minor	38 28 N.	27 7 E.	...	11	209	5
Snowville	Virginia	37 0 N.	80 40 W.	...	11	120	1
Socorro	New Mexico	34 4 N.	107 0 W.	...	12	40 and 42	2
Soendmor	Norway	62 30 N.	6 20 E.	...	6	25	47 (?)
Solathurn	Switzerland	47 13 N.	7 35 E.	...	9	206 and 237	72
Sombrero Island	West Indies	18 35 N.	63 27 W.	...	15	18 and 17	1
Somerset	Cape York	10 44 S.	142 36 E.	70	21	39	14
Somerset	Pennsylvania	40 2 N.	79 2 W.	1997	10	142, 143 & 144	1, 5 and 8
Somerville	New York	44 1 N.	75 25 W.	...	10	122	1 and 3
Sonoma	California	38 18 N.	122 24 W.	...	11	17	2
Soria	Spain	4 44 N.	2 33 W.	3504	18	348 and 349	29
Source of the Des [Moines.	....	....	....	...	10	74	83
South Alabama	New York	43 3 N.	78 3 W.	...	10	160	1
South Bend	Indiana	41 37 N.	86 8 W.	...	10	111	1
South Bethlehem	Pennsylvania	40 32 N.	75 28 W.	...	10	196	1
South Cairne	Scotland	55 0 N.	5 8 W.	217	7	33	7
South Edmeston	New York	42 23 N.	75 16 W.	...	10	187	1
South Hartford	New York	43 15 N.	73 21 W.	...	10	227	1
Southland	New Zealand	46 17 S.	168 20 E.	79	28	64 and 66	14 and 137
South Pass	Illinois	37 28 N.	89 14 W.	1050	11	90 and 91	1
Southport	Wisconsin	42 35 N.	87 47 W.	...	10	100	1
South Thomaston	Maine	44 6 N.	69 12 W.	...	10	311	1 and 9
South Trenton	New Jersey	43 10 N.	74 56 W.	...	10	187	1
Southwest Harbor	Maine	44 0 N.	68 39 W.	...	10	311	9
Southwick	England	52 30 N.	1 25 E.	...	8	93 and 94	47 (?)
Southwick	Massachusetts	42 2 N.	72 10 W.	265	10	259 and 260	1
Spanish Ranche	California	39 56 N.	120 40 W.	...	11	15	1
Sparta	Georgia	33 17 N.	83 9 W.	550	12	127 and 128	1
Speke's Station	Ethiopia	1 37 N.	32 20 E.	...	18	26	14
Spencertown	New York	42 19 N.	73 41 W.	700	10	227	1
Spiceland	Indiana	39 48 N.	85 18 W.	...	11	101	1
Splugen	Switzerland	46 33 N.	9 20 E.	...	9	254 and 273	72
Springdale	Kentucky	38 7 N.	85 34 W.	570	11	106 and 107	1 and 9
Springfield	Alabama	32 58 N.	87 57 W.	...	12	115	9
Springfield	Illinois	39 50 N.	89 33 W.	...	11	91	1
Springfield	Massachusetts	42 6 N.	72 35 W.	199	10	259 and 260	1
Springfield	Missouri	37 12 N.	93 12 W.	...	11	81	1
Springfield	Ohio	39 53 N.	83 49 W.	...	11	109	1
Springfield	Texas	31 39 N.	96 40 W.	4500	12	69	1
Springfield	Vermont	43 18 N.	72 33 W.	...	10	256	1
Spring Hill	Arkansas	33 33 N.	93 35 W.	188	12	72	1
Spring Hill	Kansas	38 37 N.	94 36 W.	...	11	72	1
Spring Hill College.	Alabama	30 42 N.	88 1 W.	...	12	104 and 106	31
Springvale	Wisconsin	43 29 N.	89 14 W.	...	10	100	1
Springville	New York	42 30 N.	78 50 W.	1100	10	150 and 160	3 and 1
Spydburg	Norway	59 30 N.	8 58 E.	...	7	54	24
Stafford	Connecticut	42 0 N.	72 18 W.	...	10	267	9
Stalla	Switzerland	46 28 N.	9 50 E.	...	9	266 and 273	72
Stanbridge	Canada	45 8 N.	73 0 W.	...	9	70 and 71	1
Standish	Maine	43 45 N.	70 30 W.	...	10	309	1
Stanislau	Austrian Galicia	48 55 N.	24 18 E.	...	9	349 and 350	22
Stanitza (Alexandrovskaya.)	Russia	44 43 N.	42 33 E.	...	10	390	4

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Stanz	Switzerland	46° 57′ N.	8° 20′ E.	...	9	213 and 237	72 and 21
Stapleton	New York	40 39 N.	74 4 W.	...	10	243	1
Star City	Nevada	40 30 N.	119 30 W.	...	10	40	1
State Hospital	Pennsylvania	40 15 N.	76 40 W.	...	10	196	1
Statesville	North Carolina	35 30 N.	80 30 W.	...	9	124	1
Staunton	Virginia	38 8 N.	79 6 W.	...	11	119	1
Stavropol	Russia	44 43 N.	41 38 E.	...	10	387	20
Stensele	Sweden	65 0 N.	17 0 E.	...	...	22	10
Stettin	Prussia	53 25 N.	12 30 E.	...	8	192 (a)	137
Steuben	Maine	44 28 N.	67 50 W.	50	10	313 and 314	1 and 9
Steubenbach	Bohemia	49 7 N.	13 23 E.	...	9	328 and 330	22
Steubenville	Ohio	40 25 N.	80 42 W.	...	10	126 and 129	1, 5 and 31
Stevensville	Pennsylvania	41 45 N.	76 35 W.	...	10	190	1
Stobo Castle	Scotland	55 37 N.	3 20 W.	605	7	49	7
Stockholm	Sweden	59 20 N.	18 9 E.	...	7	85, 86, 87 & 90	10 and 68
Stockton	California	37 57 N.	121 14 W.	...	11	21 and 26	1
Stockton	Missouri	37 36 N.	93 48 W.	800	11	81	1
Stone Lighthouse	Germany	?	?	...	8	162 and 173	68
Stonyhurst	England	53 51 N.	2 28 W.	381	8	72 and 80	13
Stony Point	California	38 40 N.	45 50 W.	...	11	17	1
Storkiro	Finland	63 1 N.	22 8 E.	...	6	39 and 42	4
Stornoway	Scotland	58 12 N.	6 21 W.	70	7	26	7 and 14
Strassburg	France	48 35 N.	7 45 E.	460	9	162 and 165	68
Stratford	England	52 12 N.	1 44 W.	...	8	82 and 94	27 and 52
Stratford	New Hampshire	44 44 N.	71 34 W.	1000	10	276 and 277	1
Stratham	New Hampshire	43 0 N.	70 54 W.	100	10	281	1
Strathfield Turgiss	England	51 24 N.	....	209	8	105 and 118	13
Streatly Vicarage	England	51 30 N.	1 30 W.	152	8	103 and 118	13
Strehla	Saxony	51 21 N.	13 12 E.	...	8	193	21
Stribbling Springs	Virginia	40 58 N.	75 16 W.	1600	10	119	1
Stronvar	Scotland	56 21 N.	4 20 W.	470	7	31	7
Stroudsburg	Pennsylvania	40 58 N.	75 16 W.	...	10	196	8
Sturbington	England	?	?	...	8	130 and 133	68
Stuttgard	Wurtemberg	48 44 N.	9 10 E.	...	9	282	47 (?)
Stykkisholm	Iceland	65 10 N.	22 43 W.	37	5	15	7 and 17
Subathu	Hindoostan	30 58 N.	76 59 E.	...	12	187	89
Suez	Egypt	29 56 N.	32 37 E.	...	13	73 (a)	137
Suffern's	New York	41 30 N.	74 31 W.	...	10	243	1
Sugar Grove	Pennsylvania	42 0 N.	79 20 W.	...	10	138	1
Sugar Island	Michigan	?	?	...	9	65	1
Sukkur	India	27 40 N.	68 49 E.	...	13	74	42
Summerville	Georgia	34 28 N.	85 34 W.	...	12	202 and 209	1 and 32
Summit	Wisconsin	43 5 N.	88 30 W.	...	10	100	1
Summit Hill	Pennsylvania	40 50 N.	75 55 W.	...	10	196	1
Superior	Wisconsin	46 38 N.	92 3 W.	680	9	52 and 53	1
Surry	Virginia	37 10 N.	76 50 W.	...	11	143	1
Sursee	Switzerland	47 10 N.	8 5 E.	...	9	208 and 237	72
Susquehanna Depot	Pennsylvania	42 0 N.	75 30 W.	...	10	190	1
Swansea	Wales	51 37 N.	3 57 W.	18	8	52	47
Sweaborg	Finland	60 1 N.	24 39 E.	...	6	52 and 54	20
Sween Island	Australia	17 7 S.	139 41 E.	14	22	47	17
Sweet Water Bridge	Idaho	....	....	...	10	51	1
Syam	France	46 45 N.	5 54 E.	...	9	146 and 148	6
Sydney	New South Wales	33 52 S.	151 15 E.	155	25	71	14, 59 & 116
Syevernaja Ferma	Russia	59 25 N.	38 26 E.	...	7	95	4
Sykesville	Maryland	39 23 N.	76 57 W.	700	11	130 and 131	1
Syra	Greece	37 25 N.	24 55 E.	...	11	207	87
Syracuse	New York	43 1 N.	76 15 W.	...	10	173 and 187	1 and 3
Tabreez	Persia	38 2 N.	46 16 E.	...	11	218	123
Taganrog	Russia	47 12 N.	38 57 E.	...	9	363	4 and 20
Tahiti	Society Islands	17 29 S.	149 29 W.	...	22	7	14
Taimurland	Siberia	72 15 to 73 15 N.	100 E.	...	4	23	69
Tamarack	Minnesota	45 N.	93 30 W.	...	9	49	1
Tamatave	Madagascar	18 20 S.	49 11 E.	...	22	35 and 36	14
Tambof	Russia	52 43 N.	41 29 E.	580	8	230 (a)	4
Tammela	Finland	60 50 N.	23 50 E.	...	6	47	4
Tampa Bay	Florida	27 57 N.	82 35 W.	...	13	46 and 50	32
Tampico	Mexico	22 17 N.	97 55 W.	...	14	7	15
Tamworth	New Hampshire	43 50 N.	71 19 W.	...	10	281	1
Tananarivou	Madagascar	19 0 S.	45 40 E.	...	22	34 and 36	68
Taos	New Mexico	36 23 N.	105 50 W.	...	11	43	2
Tara	Siberia	56 55 N.	74 24 E.	...	7	120	4

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Tara Hill	Ireland	52° 42′ N.	6° 13′ W.	...	8	44	26
Taranaki	New Zealand	39 4 S.	174 5 E.	...	26	90 (a)	137
Tarare	France	45 53 N.	4 26 E.	...	9	131 and 138	11
Tarifa	Spain	36 0 N.	5 40½W.	49	11	186 and 190	29
Tarentum	Pennsylvania	40 37 N.	79 19 W.	950	10	143 and 144	1
Tarrant	Texas	33 16 N.	95 34 W.	...	12	67	1
Tarsus	Asia Minor	36 46 N.	34 44 E.	...	11	210	6
Tarum	Denmark	55 26 N.	8 39 E.	...	7	57	14
Taschkent	Central Asia	41 19 N.	66 56 E	...	10	398 (a)	137
Taunton	Massachusetts	41 49 N.	71 9 W.	...	10	299 and 300	1
Taylorsville	Kentucky	38 3 N.	85 15 W.	...	11	107	1
Taymouth	Scotland	56 35 N.	4 1 W.	...	7	43	7
Teflis. (See Tiflis.)							
Tegernsee	Bavaria	47 43 N.	11 47 E.	...	9	296 and 301	24
Tehran	Persia	35 40 N.	50 52 E.	...	11	220	123
Teneriffe	Canary Islands	28 30 N.	16 45 W.	...	13	71	98
Terceira	Azores	38 40 N.	27 50 W.	...	11	170 and 174	32 (?)
Texana	Texas	28 55 N.	96 40 W.	60	13	20	1
The Glen	Scotland	55 35 N.	3 9 W.	765	7	49	7
Theresa	New York	44 12 N.	75 48 W.	...	10	209	1
The Rock	Georgia	32 54 N.	84 24 W.	833	12	131 and 132	1
Thetford	England	52 26 N.	0 45 E.	...	8	91 and 94	47 (?)
Thirlestane Castle	Scotland	55 43 N.	2 47 W.	558	7	49	7
Thomasville	Georgia	30 51 N.	84 10 W.	...	12	132	1
Thomson	Georgia	33 26 N.	82 28 W.	...	12	127 and 128	1
Thornbury	North Carolina	36 20 N.	77 20 W.	...	11	144 and 145	1
Thornhill	Georgia	31 17 N.	81 31 W.	...	12	132	1
Thorshavn	Faroe Islands	62 3 N.	6 43 W.	12	6	21	7, 17 & 37
Throg's Neck	New York	40 49 N.	73 49 W.	...	10	243	1
Thunder Bay Island	Michigan	45 2 N.	83 9 W.	...	9	65	1 and 75
Thurston	Scotland	55 57 N.	2 28 W.	327	7	49	7
Thusis	Switzerland	46 41 N.	9 20 E.	...	9	253 and 273	72
Tickfaw	Louisiana	30 30 N.	90 32 W.	50	12	89	1
Tiflis	Russia	41 41 N.	44 50 E.	1500	10	392, 393	16, 20, 38, 65
Timbuctoo	Soudan, Africa	17 10 N.	3 0 W.	...	15	29	88 [66
Tinghai	China	30 0 N.	122 6 E.	...	12	190	6
Tioga	Pennsylvania	41 53 N.	77 15 W.	...	10	162	1
Tiskilwa	Illinois	41 15 N.	89 30 W.	...	10	104	1
Titicaca Lake	Peru and Bolivia	15¼ to 16½S.	68¾ to 70W.	...	22	14	84
Tobolsk	Siberia	58 12 N.	68 18 E.	355	7	118	14, 16 & 20
Toledo	Ohio	41 45 N.	83 36 W.	...	10	125	1
Tomas	Nubia	22 45 N.	32 12 E.	...	14	29	70
Tomsk	Siberia	56 30 N.	85 10 E.	300	7	121	20
Tongue	Scotland	58 30 N.	4 25 W.	40	7	27	7
Topeka	Kansas	39 3 N.	95 39 W.	...	11	71	1
Topsham	Maine	44 0 N.	70 0 W.	100	10	309	1
Topsfield	Massachusetts	42 38 N.	71 57 W.	...	10	296	1
Tornaveen	Scotland	?	?	...	7	39	7
Toronto	Canada	43 39 N.	79 2 W.	340	10	131, 132 & 133	1 and 133
Toronto	Missouri	37 54 N.	92 30 W.	...	11	81	1
Tortugas Island	Florida	24 37 N.	83 0 W.	...	14	12 and 14	32
Totma	Russia	59 58 N.	42 46 E.	...	7	100 and 103	4
Toulouse	France	43 36 N.	1 30 E.	650	10	361 and 362	6, 21 & 48
Tovar (Colonia)	Venezuela	10 26 N.	67 20 W.	...	16	9 and 12	1
Towanda	Pennsylvania	41 47 N.	76 34 W.	...	10	190	1
Townsendville (Lodi)	New York	42 57 N.	76 55 W.	1000	10	186 and 187	1
Trappe	Pennsylvania	40 13 N.	75 19 W.	...	10	196	1
Travers-des-Sioux	Minnesota	44 20 N.	93 35 W.	...	10	77	1
Trebizonde	Asia Minor	40 25 N.	39 45 E.	...	10	386	124
Trenton	Missouri	40 2 N.	93 39 W.	...	10	83	1
Trenton	New Jersey	40 14 N.	74 30 W.	...	10	245 and 248	1
Treves	Prussia	49 46 N.	6 39 E.	...	9	275	21
Trieste	Illyria	45 39 N.	13 44 E.	79	9	321 and 323	22
Trincomalee	Ceylon	8 34 N.	81 19 E.	...	17	40 and 41	34
Trinity	Louisiana	31 37 N.	91 47 W.	68	12	86 and 87	1
Trinity College	North Carolina	35 45 N.	80 0 W.	...	11	124	1
Trinity Gask	Scotland	56 20 N.	3 42 W.	133	7	43	7
Tripoli	Northern Africa	32 51 N.	13 12 E.	...	12	173	21 and 68
Trogen	Switzerland	47 25 N.	9 35 E.	...	9	255 and 273	72
Tromsoe	Norway	69 39 N.	18 58 E.	26	5	18	19
Trout Run Valley	Virginia	39 30 N.	78 31 W.	1750	11	125 and 126	1
Troy	New York	42 44 N.	73 36 W.	58	10	226 and 227	1 and 9
Troy	Ohio	40 3 N.	84 6 W.	404	10	125	1

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Troy Hill	Pennsylvania	40° 30′ N.	80° 0′ W.	...	10	143 and 144	1
Truckee	California	39 25 N.	120 2 W.	...	11	14 and 15	5
Truro	England	50 17 N.	5 5 W.	43	8	122 and 126	13
Truro	Massachusetts	42 3 N.	70 30 W.	...	10	303	1
Truxillo	Honduras	15 54 N.	86 0 W.	...	15	13	1
Tschermoski	Russia	59 N.	57 26 E.	...	7	132 (*a*)	126
Tubac	Arizona	31 40 N.	111 0 W.	3000	...	24 and 28	2
Tuggurt	Algeria	32 48 N.	6 28 E.	...	12	170	6
Tula	Russia	54 12 N.	37 36 E.	...	8	229	4
Tunbridge Wells	England	51 8 N.	0 14 E.	410	8	117 and 118	13
Tunis	Barbary	36 49 N.	10 7 E.	...	11	204	21
Turin	Sardinia	45 4 N.	7 40 E.	915	9	305	21
Turkey River	Iowa	43 6 N.	92 0 W.	...	10	89	9
Turks Island	Bahamas	21 29 N.	71 5 W.	...	14	18	1 and 9
Turner's Point	Texas	32 3 N.	96 0 W.	...	12	68	1
Tuscaloosa	Alabama	33 12 N.	87 42 W.	...	12	110 and 111	1 and 9
Tuscumbia	Missouri	38 13 N.	92 23 W.	600	11	80	1
Tuskeegee	Alabama	32 27 N.	85 46 W.	...	12	113 and 115	5
Tuspan	Mexico	20 46 N.	97 25 W.	...	14	7	15
Tutlingen	Wirtemburg	47 55 N.	8 48 E.	...	9	281	28
Tutuila	Navigator's Island	14 22 S.	171 0 W.	...	21	4	59
Twinsburg	Ohio	49 29 N.	81 28 W.	...	9	129	1
Udine	Italy	46 3 N.	13 16 E.	393	9	309	22
Udskoi Ostrog	Siberia	54 30 N.	134 59 E.	...	8	245	69
Uetliberg	Switzerland	47 21 N.	8 35 E.	...	9	192 and 196	72
Ufa	Russia	54 42 N.	55 59 E.	...	8	240	4
Uffenheim	Bavaria	49 30 N.	10 19 E.	...	9	289 and 297	68
Uleaborg	Russia	64 59 N.	25 30 E.	...	6	58	4
Umea	Sweden	63 50 N.	20 17 E.	...	6	36	10
Unalakleet	Alaska	63 54 N.	160 30 W.	...	6	4 and 6½	1 and 51
Union	Missouri	38 25 N.	91 9 W.	...	11	87	1
Union Bridge	Maryland	29 30 N.	77 W.	...	13	131	1
Union Hill	Texas	30 30 N.	96 31 W.	540	12	71 and 72	1
Union Ranche	California	39 30 N.	121 W.	...	11	15	1
Union Springs	New York	?	?	...	10	187	1
Uniontown	Alabama	32 30 N.	87 33 W.	...	12	115	1
Uniontown	Pennsylvania	39 54 N.	79 42 W.	...	11	127	8
Unionville	Ohio	41 50 N.	81 0 W.	650	10	129	1
University Place	Tennessee	35 12 N.	85 48 W.	2000	11	104	1
Upernavik	Greenland	72 40 N.	56 0 W.	15	4	15	14
Up Park Camp	Jamaica	17 59 N.	76 56 W.	225	15	14 and 18	1
Upper Alton	Illinois	38 55 N.	90 10 W.	...	11	90 and 91	1 and 9
Upper Glencroe	Scotland	56 29 N.	3 28 W.	...	7	43	7
Upsal	Sweden	59 52 N.	17 38 E.	77	7	84, 87 and 90	10 and 127
Uralsk	Russia	51 11 N.	51 10 E.	...	8	236	20 and 65
Urbana	Ohio	40 6 N.	83 43 W.	1015	10	124 and 125	1
Urga	Mongolia	47 55 N.	106 50 E.	...	9	374	5
Ustsysolsk	Russia	61 40 N.	50 49 E.	...	6	64 (*a*)	126
Ustyansk	Siberia	70 55 N.	138 24 E.	...	4	25	4
Utica	New York	43 7 N.	75 15 W.	173	10	184 and 187	1 and 3
Utrecht	Holland	52 6 N.	5 8 E.	44	8	150 and 151	21, 28 & 39
Vacaville	California	38 21 N.	121 58 W.	...	11	19	1
Valencia	Spain	39 28 N.	0 26 W.	79	11	192 and 196	29
Valladolid	Spain	41 39 N.	4 47 W.	2'93	10	345 and 349	29
Valley Forge	Pennsylvania	40 7 N.	75 28 W.	...	10	196	1
Valognes	France	49 31 N.	1 28 W	...	9	101 and 110	6
Valparaiso	Chili	33 2 S.	71 40 W.	1	25	20	1, 34 & 59
Valparaiso	Indiana	41 29 N.	87 6 W.	...	10	111	1
Valsainte	Switzerland	46 38 N.	7 20 E.	...	9	200 and 237	72
Vardo	Norway	70 22 N.	31 7 E.	43	4	19 and 42	14 and 19
Varo	Finland	63 9 N.	22 5 E.	...	6	40	4
Vasa (Laichela)	Finland	63 4 N.	21 40 E.	...	6	38 and 42	4
Vassalboro	Maine	40 27 N.	69 42 W.	...	10	311	1
Vaudens	Switzerland	46 37 N.	7 5 E.	...	9	197 and 237	72
Venado	Mexico	22 45 N.	100 50 W.	...	14	7	15
Vendome	France	47 47 N.	1 4 E.	...	9	111 and 113	6
Vera Cruz	Mexico	19 10 N.	96 8 W.	26	15	10	2
Verdun	France	46 53 N.	5 5 E.	...	9	143 and 148	11
Vergara	Spain	43 7 N.	2 21 W.	551	10	342 and 343	29
Vernon Springs	Iowa	43 20 N.	92 12 W.	...	10	89	1
Versailles	France	48 48 N.	2 7 E.	...	9	115 and 118	6
Vesoul	France	47 38 N.	6 10 E.	...	9	157 and 161	11
Vevay	Indiana	38 46 N.	84 59 W.	...	11	101	1

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Viatka	Russia	58° 25′ N.	49° 50′ E.	...	7	108 and 110	16
Vicksburg	Mississippi	32 22 N.	90 56 W.	...	12	98 and 99	1
Victoria	Mexico	24 10 N.	98 45 W.	...	14	7	68
Victoria Peak, Hong-Kong.	China	22 17 N.	114 6 E.	1745	14	....	137
Victoria Harbor	Boothia Felix	70 9 N.	91 34 W.	...	4	9	103
Vidalia	Louisiana	32 0 N.	91 30 W.	...	12	87	1
Vienna	Austria	48 13 N.	16 23 E.	638	9	336 and 337	21, 22 and 28
Vienna	Virginia	38 53 N.	77 12 W.	400	11	126	1
Villa	Norway	64 33 N.	10 42 E.	...	6	30	14
Villaviciosa	Spain	40 24 N.	3 56 W.	...	10	346 and 349	29
Vilna. (See Wilna.)							
Vinal Haven	Maine	44 2 N.	68 48 W.	...	10	311	9
Vineland	New Jersey	39 38 N.	75 0 W.	...	11	155	1
Vineland	Utah	37 N.	118 W.	...	11	37	1
Vinton	Iowa	42 15 N.	92 45 W.	607	10	89	1
Virdois	Finland	62 15 N.	23 40 E.	...	6	55	4
Vladikavkas. (See Wladikavkas.)							
Vladimir	Russia	56 7 N.	40 25 E.	...	7	98 and 103	4
Vlissengen	Holland	51 26 N.	3 34 E.	...	8	144 and 151	21
Vologda. (See Wologda.)							
Voro. (See Varo.)							
Voronesch	Russia	51 40 N.	39 22 E.	...	8	230	4
Wabasha	Minnesota	44 30 N.	92 15 W.	850	10	77 and 87	1
Waco	Texas	31 35 N.	96 50 W.	...	12	69	1
Waioli	Sandwich Islands	22 14 N.	159 52 W.	...	14	2	14, 68
Wakefield	England	53 42 N.	1 31 W.	115	8	75 and 80	13
Wake Forest College	North Carolina	35 59 N.	78 28 W.	...	11	145	9
Waldron	Arkansas	34 53 N.	94 0 W.	...	12	81	1
Wales	New York	42 46 N.	78 37 W.	...	10	160	1
Wallingford	Connecticut	41 26 N.	72 50 W.	133	10	265(*a*) & 267	1
Walnut Grove	Tennessee	36 0 N.	82 53 W.	1350	11	112	1
Walnut Hills	Indiana	39 50 N.	84 54 W.	...	11	101	1
Waltham	Massachusetts	42 24 N.	71 14 W.	...	10	291 and 296	68
Wampsville	New York	43 4 N.	75 50 W.	500	10	186 and 187	1
Wanlockhead	Scotland	55 24 N.	3 48 W.	1334	7	49	7
Wanship	Utah	40 42 N.	111 W.	...	10	48	1
Wapella	Illinois	40 11 N.	89 7 W.	...	10	107	1
Warren	Maine	44 5 N.	59 15 W.	...	10	311	1
Warren	Pennsylvania	41 57 N.	79 14 W.	...	10	138	8
Warrensburg	Missouri	38 41 N.	93 56 W.	...	11	80	1
Warrenton	Missouri	38 50 N.	91 9 W.	825	11	87	1
Warrenton	North Carolina	36 30 N.	78 15 W.	...	11	144 and 145	1
Warrington	Florida	30 20 N.	87 16 W.	9	12	120	1
Warrior's Mark	Pennsylvania	40 39 N.	78 14 W.	...	10	166 and 167	1
Warsaw	Illinois	40 20 N.	91 31 W.	...	10	101 and 102	1
Warsaw	Poland	52 13 N.	21 5 E.	450	8	217	21
Wartburg	Hungary	48 13 N.	17 23 E.	...	9	341	40
Washington	Arkansas	33 43 N.	93 37 W.	...	12	82	1
Washington	District of Columbia	38 56 N.	76 58 W.	60	11	138	1
Washington	Iowa	43 30 N.	91 55 W.	...	10	89	1
Washington	Mississippi	31 31 N.	91 20 W.	...	12	102	1
Washington	Pennsylvania	40 11 N.	80 16 W.	...	10	144	1
Washington	Tennessee	35 33 N.	84 52 W.	...	11	112	68
Washington	Texas	30 26 N.	96 15 W.	360	12	71 and 72	1
Waterburgh	New York	42 15 N.	76 30 W.	...	10	187	1
Waterbury	Connecticut	41 33 N.	73 2 W.	...	10	267	1
Waterford	New York	42 48 N.	73 41 W.	70	10	227	1
Waterford	Wisconsin	42 48 N.	88 13 W.	...	10	100	1
Waterloo	Illinois	38 30 N.	90 20 W.	...	11	91	1
Waterloo	Iowa	42 30 N.	92 30 W.	...	10	89	1
Watertown	Massachusetts	42 24 N.	71 12 W.	...	10	296	68
Watertown	Wisconsin	43 13 N.	88 45 W.	...	10	100	1
Watertown Arsenal	New York	43 56 N.	76 8 W.	...	10	198 (*a*)	2
Waterville	New York	42 56 N.	75 29 W.	...	10	187	1
Watervliet	New York	42 44 N.	73 41 W.	...	10	221 and 227	2
Watsonville	California	36 56 N.	121 47 W.	...	11	29	1
Waukegan	Illinois	42 21 N.	87 55 W.	...	10	107	1
Waukesha	Wisconsin	43 0 N.	88 12 W.	833	10	96, 97, 99 & 100	1
Waukon	Iowa	43 15 N.	91 30 W.	...	10	89	1
Waupaca	Wisconsin	44 20 N.	89 11 W.	900	10	97	1

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Wausau	Wisconsin	44° 59′ N.	89° 40′ W.	...	10	84, 85 & 86	1
Wautona	Wisconsin	?	?	...	10	100	1
Waverly	Illinois	37 36 N.	90 12 W.	...	11	91	1
Waverly	New York	42 0 N.	76 30 W.	...	10	160	1
Waynesboro	Pennsylvania	39 46 N.	77 28 W.	...	11	127	1
Waynesville	Illinois	40 16 N.	89 7 W.	...	10	109	1
Waynesville	Missouri	37 50 N.	92 7 W.	...	11	81	1
Webberville	Texas	30 14 N.	97 34 W.	...	12	62	1
Webster	Maine	44 4 N.	70 4 W.	...	10	309	1
Weimar	Saxe Weimar	50 58 N.	11 20 E.	...	8	184 and 190	40
Weissensleim	Switzerland	47 15 N.	7 3 E.	...	9	205 and 237	72
Welchfield	Ohio	41 25 N.	81 12 W.	1205	10	128 and 129	1
Wellington	New Zealand	41 15 S.	174 45 E.	90	27	81 and 82	34
Wellington	Ohio	41 8 N.	81 13 W.	...	10	129	1
Wellsboro'	Pennsylvania	41 42 N.	77 20 W.	...	10	162	1
Wellsburg (Cross Creek.)	Virginia	40 20 N.	80 41 W.	...	10	144	1
Wellsville	New York	42 7 N.	78 6 W.	1480	10	160	1
Wenersborg	Sweden	58 23 N.	12 20 E.	...	7	65	10
West Barre	Ohio	41 40 N.	83 40 W.	...	10	125	1
West Bedford	Ohio	40 18 N.	82 1 W.	876	10	128 and 129	1
West Brunswick	Virginia	36 40 N.	77 46 W.	...	11	143	9
West Chester	Pennsylvania	39 59 N.	75 35 W.	...	11	151	1, 8 and 9
West Concord	New York	43 0 N.	79 0 W.	2000	10	160	1
West Cornwall	Connecticut	41 50 N.	73 21 W.	...	10	266 and 267	1
West Day	New York	43 20 N.	74 16 W.	1200	10	....	1
West Dennis	Massachusetts	41 40 N.	70 11 W.	..	10	303	1
West Enfield	New Hampshire	43 30 N.	72 0 W.	..	10	276 and 277	1
Westeras	Sweden	59 37 N.	16 32 E.	...	7	83	10
Western Academy	Indian Territory	39 0 N.	94 41 W.	...	11	71	1
Western Star	Ohio	41 4 N.	80 40 W.	...	10	129	1
Westervik	Sweden	57 45 N.	16 35 E.	...	7	81	10
Westerville	Ohio	40 4 N.	83 10 W.	...	10	129	1
West Fairlee	Vermont	43 55 N.	72 15 W.	...	10	256	1
Westfield	Massachusetts	42 6 N.	72 48 W.	...	10	259 and 260	1
West Green	North Carolina	36 6 N.	79 45 W.	...	11	124	1
West Haverford	Pennsylvania	40 0 N.	75 21 W.	400	10	195 and 196	1
West Newton	Massachusetts	42 22 N.	71 16 W.	...	10	296	1
Weston	Virginia	38 57 N.	80 23 W.	...	11	117	1
West Point	New York	41 22 N.	73 57 W.	...	10	237 and 243	2
Westport	Ireland	53 50 N.	9 37 W.	...	8	35 and 39	25
Westport	Missouri	39 0 N.	94 40 W.	...	11	80	1
West Salem	Illinois	38 30 N.	88 0 W.	...	11	92 and 93	1
West Stockbridge	Massachusetts	42 18 N.	73 18 W.	...	10	259 and 260	1
Westtown	Pennsylvania	39 57 N.	75 43 W.	550	11	132 and 151	1 and 8
West Urbana	Illinois	40 9 N.	88 17 W.	727	10	108 and 109	1
West Union	Iowa	42 58 N.	91 50 W.	1300	10	89	1
West Union	Ohio	38 47 N.	83 28 W.	...	11	109	1
Westville	Mississippi	31 52 N.	90 0 W.	...	12	102	1
West Waterville	Maine	44 30 N.	69 45 W.	...	10	311	1
West Wood	Virginia	37 33 N.	77 27 W.	...	11	143	1
Wet-au-Glaize	Missouri	38 6 N.	92 17 W.	...	11	81	1
Wewokaville	Alabama	33 20 N.	86 (?) W.	...	12	110 and 111	1
Wexio	Sweden	56 53 N.	14 48 E.	...	7	72	10
Weyauwega	Wisconsin	45 15 N.	88 50 W.	...	9	97	1
Weybridge Heath	England	51 21 N.	0 31 W.	150	8	108 and 118	13
Weymouth	Massachusetts	42 10 N.	71 0 W.	150	10	295 and 296	1
Wheaton	Illinois	41 49 N.	88 6 W.	682	10	106 and 107	1
Wheeling	Virginia	40 7 N.	80 42 W.	...	10	144	1
Wheelock	Texas	30 55 N.	96 27 W.	450	12	72	1
White Day	Virginia	39 32 N.	80 4 W.	...	11	117	1
White Earth Reserv.	Minnesota	47 50 N.	95 35 W.	...	9	42	1
Whitefield	New Hampshire	44 20 N.	71 15 W.	...	10	277	1
Whitehead Island	Maine	43 52 N.	69 2 W.	...	10	311	9
White Island	New Hampshire	42 58 N.	70 37 W.	...	10	281	1
White Mountains (Mt. Washington.)	New Hampshire	44 15 N.	71 16 W.	6285	10	274 and 277	57
White Plains	New York	41 2 N.	73 47 W.	...	10	243	68
White Sea	Russia	....	....	...	5	62	37 (?)
Whitesboro'	Iowa	41 38 N.	95 40 W.	...	10	72	1
White-boro' (Oneida Institute).	New York	43 7 N.	75 21 W.	450	10	183 and 187	3
Whitemarsh Island	Georgia	32 4 N.	81 5 W.	...	12	131 and 132	1 and 9

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Whittlesey	Wisconsin	46° 33′ N.	91° 0′ W.	...	9	52 and 53	1
Wick	Scotland	58 28 N.	3 6 W.	...	7	36	27
Wilberforce	Canada	43 20 N.	81 36 W.	...	10	130	68
Wildhause	Switzerland	47 12 N.	9 20 E.	...	9	250 and 273	72
Wilkensville	South Carolina	34 50 N.	81 36 W.	...	12	138	1
Wilkesbarre	Pennsylvania	41 14 N.	75 56 W.	...	10	190	8
Williamsburg	Maine	45 21 N.	68 55 W.	...	9	76	1
Williamsburg	Virginia	37 17 N.	76 40 W.	...	11	143	81(?) and 95
Williamsport (Pickaway Co.)	Ohio	39 37 N.	83 7 W.	...	11	109	1
Williamsport (Morrow Co.)	Ohio	40 45 N.	80 45 W.	...	10	129	1
Williamsport	Pennsylvania	41 19 N.	77 5 W.	...	10	162	1
Williamstown	Massachusetts	42 43 N.	73 13 W.	725	10	257 and 260	1 and 5
Willow Creek	Illinois	41 45 N.	89 5 W.	1040	10	104	1
Wilmington	Delaware	39 41 N.	75 28 W.	25	11	147	1
Wilmington	Vermont	42 53 N.	72 47 W.	...	10	256	1
Wilna	Russia	54 41 N.	25 28 E.	388	8	219	48 (?)
Wilson	North Carolina	35 41 N.	77 47 W.	...	11	145	1
Wilson	New York	43 20 N.	78 56 W.	250	10	160	1
Wilton	England	51 4 N.	1 52 W.	150	8	96 and 118	13
Winchester	Tennessee	35 12 N.	86 W.	...	11	104	1
Winchester	Virginia	39 15 N.	78 10 W.	...	11	125 and 126	1
Windham	Maine	43 49 N.	70 17 W.	...	10	300 and 309	1
Windsor	Nova Scotia	44 59 N.	64 7 W.	200	10	316, 317 & 319	1 and 24 (?)
Winnamac	Indiana	41 7 N.	86 45 W.	...	10	111	9
Winnebago	Illinois	42 17 N.	89 11 W.	900	10	104	1
Winowkupa	Labrador	?	?	...	8	17	1
Winterberg	Bohemia	49 3 N.	13 44 E.	...	9	329 and 330	22
Winnipeg	Hudson's Bay Terr.	49 52 N.	97 W.	650	9	58	1
Winter Island	Arctic Ocean	66 11 N.	83 10 W.	...	5	9	101
Winterthur	Switzerland	47 30 N.	8 50 E.	...	9	194 and 196	72
Winthrop	Maine	44 19 N.	69 59 W.	...	10	309	68
Wirt Court House	Virginia	39 5 N.	81 26 W.	...	11	116 and 117	1
Wisbech	England	52 41 N.	0 10 E.	14	8	86 and 94	13
Wisby	Sweden	57 37 N.	18 26 E.	39	7	88	10
Witenewo	Russia	?	?	...	7	106	16
Wladikawkas	Russia	43 2 N.	44 41 E.	...	10	391 (*b*)	126
Wladimir. (See Vladimir.)							
Wolfville	Nova Scotia	45 6 N.	64 25 W.	95	9	83 and 84	1
Wologda	Russia	59 14 N.	40 3 E.	...	7	96 and 103	4, 20 & 36
Woltschansk	Russia	50 5 N.	37 2 E.	370	8	228	16 and 20
Woodbine	Iowa	?	?	...	10	72	1
Woodboro'	Texas	33 47 N.	96 36 W.	...	12	67	1
Woodlawn	Maryland	39 39 N.	76 4 W.	...	11	131	1
Wood's Hole	Massachusetts	41 34 N.	70 37 W.	...	10	302 and 303	1
Woodstock	Illinois	42 20 N.	88 30 W.	...	10	107	1
Woodstock	Vermont	43 36 N.	72 35 W.	740	10	255 and 256	1
Woodstown	New Jersey	39 39 N.	75 25 W.	30	11	155	1
Wooster	Ohio	40 49 N.	81 59 W.	...	10	129	1
Worcester	Massachusetts	42 16 N.	71 48 W.	537	10	290, 295 & 296	1 and 31
Worthing	England	50 47 N.	0 22 W.	30	8	131 and 133	13
Worthington	Pennsylvania	40 52 N.	79 39 W.	1050	10	144	1
Wurtzburg	Bavaria	49 46 N.	9 54 E.	...	9	286, 287 & 297	24
Wyandotte City	Kansas	39 8 N.	94 20 W.	707	11	71	1
Wyanet	Illinois	40 30 N.	89 45 W.	...	10	104	1
Wyborg	Denmark	56 34 N.	9 18 E.	...	7	59	139
Wytheville	Virginia	36 55 N.	81 0 W.	...	11	120	1
Yacoutsk	Siberia	62 1 N.	129 44 E.	285	6	67	4
Yankton	Dakota	42 51 N.	97 31 W.	...	10	62	1
Yankeetown	Ohio	40 0 N.	84 32 W.	...	10	125	1
Yan Yean	Australia	37 36 S.	145 7 E.	...	26	79	18
Yarensk	Russia	62 7 N.	49 23 E.	...	6	64	4
Yarkund	China	37 15 N.	75 E.	...	11	224	119
Yazoo City	Mississippi	32 55 N.	90 31 W.	...	12	99	1
Yellow Springs	Ohio	39 45 N.	83 50 W.	...	11	109	1
Yellsville	Arkansas	36 14 N.	92 40 W.	1000	11	78	1
Yester	Scotland	55 54 N.	2 44 W.	420	7	49	7
Yokohama	Japan	35 27 N.	139 40 E.	...	11	228 (*a*)	137
York	England	53 58 N.	1 5 W.	50	8	77 and 80	13
York	Pennsylvania	39 58 N.	76 40 W.	...	11	127	8 and 9
York Factory	Hudson's Bay Terr.	57 N.	92 26 W.	...	7	16	14

Name of station.	State or country.	Latitude.	Longitude from Greenwich.	Height above the sea.	No. of zone.	Serial No. in zone.	Reference to authority in Appendix.
York Town	Texas	29° 0′ N.	97° 37′ W.	...	13	27	1
Youngstown (Fort Niagara.)	New York	43 15 N.	79 5 W.	...	10	146 and 160	2
Youngsville	Pennsylvania	41 50 N.	79 20 W.	...	10	138	1
Ypsilanti	Michigan	42 15 N.	83 47 W.	751	10	123	1
Yucatan	Mexico	20 to 21½ N.	87 to 90 W.	...	14	8	130
Zaboon	Egypt	28 30 N.	29 10 E.	...	13	72	70
Zacualtipam	Mexico	20 35 N.	98 20 W.	...	14	7	15
Zanesfield	Ohio	40 22 N.	83 38 W.	...	10	125	1
Zanesville	Ohio	39 58 N.	82 1 W.	700	11	114 and 115	1 and 9
Zebulon	Georgia	33 71 N.	84 26 W.	...	12	127 and 128	1
Zermatt	Switzerland	46 8 N.	7 50 E.	...	9	244 and 248	72
Zermetz	Switzerland	46 42 N.	10 5 E.	...	9	268 and 273	72
Zlatouste	Russia	55 8 N.	59 38 E.	...	7	112	4, 16, 20 & 36
Zug	Switzerland	47 10 N.	8 35 E.	...	9	217 and 237	72
Zurich	Switzerland	47 23 N.	8 35 E.	...	9	191 and 196	72
Zurzach	Switzerland	47 35 N.	8 13 E.	...	9	184 and 196	72
Zwanenburg	Holland	52 23 N.	4 46 E.	...	8	152 and 160	41

ALPHABETICAL LIST OF COUNTRIES, STATES, DISTRICTS, OCEANS, AND SEAS.

Name.	No. of zone.	Serial numbers in zone.	Name.	No. of zone.	Serial numbers in zone.
Abyssinia............	15	31	Australia	25	68 to 71
Abyssinia............	16	26, 27 and 28	Australia	26	72 to 87
Abyssinia............	17	34	Austrian Empire ..	8	199 to 208, 210, 211, 214 and 217
Alabama............	12	103 to 117	Austrian Empire ..	9	311 to 350
Alaska	6	2 to 6½	Austrian Empire ..	10	378
Alaska	7	10, 11 and 12	Azores............	11	169 to 175 (*a*)
Alaska	8	2 and 13	Baffin's Bay.........	3	8
Algeria	11	198 to 203	Baffin's Bay.........	4	13 and 14
Algeria	12	168 to 172	Baffin's Bay.........	5	11
Antarctic Ocean ...	29	50 to 56	Baffin's Bay.........	6	12
Antarctic Ocean ...	30 to 34	Entire series in each zone	Bahama Islands...	13	59
Arabia............	13	75	Belgium............	8	139 to 143
Arabia............	14	31	Bermudas	12	150, 151 and 152
Arabia............	15	32	Black Sea............	10	380 and 381
Arabia............	16	29	Bolivia	22	14 and 15
Arctic Ocean	3	1 to 5 and 9	Brazil............	23	18
Arctic Ocean	4	1 to 12, 16, 17, 20, 21, 22, 26 and 27	California............	10	11 to 21
Arctic Ocean	5	21	California............	11	10 to 30
Arctic Ocean	5	1, 2, 9 and 10	California............	12	7 to 14
Argentine Republic	25	22, 23 and 24	Canada............	9	59 and 66 to 74
Arizona	11	32 to 30	Canada	10	130 to 134
Arizona	12	14 (*a*) to 28	Cape Verde Islands	16	24 (*a*)
Arkansas	11	77, 78 and 79	Central Africa	15	29
Arkansas	12	78 to 82	Central Africa	18	26
Atlantic Ocean.....	5	16	Central America...	14	8
Atlantic Ocean.....	6	20	Central America...	15	13
Atlantic Ocean.....	7	19, 20 and 50	Central America...	16	6
Atlantic Ocean.....	8	19 to 25	Central America...	17	11, 12 and 13
Atlantic Ocean.....	9	88 to 97	Central Asia	9, 10	368 to 373 ; 299, 398 (*a*)
Atlantic Ocean.....	10	320 to 332	Ceylon............	17	38 to 41
Atlantic Ocean.....	11	158 to 180	Chili	24	23
Atlantic Ocean.....	12	153 to 167	Chili	25	20 and 21
Atlantic Ocean.....	13	60 to 71	Chili	27	17 (*a*), (*b*), (*c*)
Atlantic Ocean.....	14	19 to 28	China............	11	225 to 228
Atlantic Ocean.....	15	19 to 28	China............	12	189 and 190
Atlantic Ocean.....	16	16 to 24	China............	14	42
Atlantic Ocean.....	17	25 to 32	Colorado	10	56, 57 and 58
Atlantic Ocean.....	18	18 to 24	Colorado............	11	51 to 57
Atlantic Ocean.....	19	20 to 34	Connecticut.........	10	261 to 267
Atlantic Ocean.....	20	15 to 28	Dacotah............	9	38, 39 and 40
Atlantic Ocean.....	20½	56 to 57 and 58	Dacotah............	10	59 to 62
Atlantic Ocean.....	21	15 to 29	Delaware	11	146, 147, 148, 156 & 157
Atlantic Ocean.....	22	16 to 32	Denmark	7	57 to 63 (*d*)
Atlantic Ocean.....	22½	51 to 54	Denmark	8	178, 179 and 180 (*b*)
Atlantic Ocean.....	23	19 to 35	Desert of Sahara...	12, 13, 15 & 16	172 (*a*), 71 (*a*), 29 (*a*), 24 (*a*)
Atlantic Ocean.....	24	25 to 37	Dist. of Columbia	11	133, 134, 137, 138 and 148
Atlantic Ocean.....	25	26 to 40	Eastern Asia	9	374
Atlantic Ocean.....	26	27 to 45	East Indies.........	16	41 and 46
Atlantic Ocean.....	27	18 to 33	East Indies.........	18	33
Atlantic Ocean.....	28	25 to 32	East Indies.........	19	43 to 46, 48
Atlantic Ocean.....	29	27 to 49	East Indies.........	20	43, 44 and 45
Australia	21	39	Egypt	12	174, 175 and 176 (*b*)
Australia	22	47	Egypt	13	72, 73 and 74
Australia	24	54			

Name.	No. of zone.	Serial numbers in zone.
England and Wales	8	49 to 133
Falkland Islands..	29	27
Faroe and Shetland [Islands.	6	21, 22 and 23
Fejee (Society) Is-[lands.	22	1 and 7
Florida	12	118 to 121, 133 and 134
Florida	13	33 to 58
Florida	14	9 to 14
France	8	134 to 138
France	9	98 to 165
France	10	355 to 368
Georgia (America.)	12	122 to 132
Georgia in Asia. (See Transcaucasia)		
Germany	8	161 to 177, 181 to 198, 209, 212, 213, 215 & 216
Germany	9	274 to 304
Greece	11	208 (a)
Greenland	3	6 and 7
Greenland	4	15
Greenland	5	12 and 13
Greenland	6	13 and 14
Guiana	17	20 to 24
Guiana	18	17
Guinea	17	32 (a)
Hindoostan. (See India.)		
Holland	8	144 to 160
Hudson's Bay Ter.	5	3 to 8
Hudson's Bay Ter.	6	7 to 11
Hudson's Bay Ter.	7	13 to 16
Hudson's Bay Ter.	8	14 to 16 (a)
Hudson's Bay Ter.	9	58, 60 and 61
Iceland	5	14 and 15
Iceland	6	15 to 19
Idaho	9	32
Idaho	10	44 and 45
Illinois	10	101 to 109
Illinois	11	90 to 93
India	12	184 (a) to 188 (c)
India	13	77 to 97
India	14	33 to 39
India	15	35 to 36
India	16	33 to 37
Indiana	10	110 to 114
Indiana	11	98 to 101
Indian Ocean	14	32 and 40
Indian Ocean	15	33, 34 and 37 to 39
Indian Ocean	16	30 to 32 and 38 to 42
Indian Ocean	17	35 to 45
Indian Ocean	18	27 to 32
Indian Ocean	19	35 to 42 and 47
Indian Ocean	20	30 to 42
Indian Ocean	21	30 to 38
Indian Ocean	22	33 and 35 to 46
Indian Ocean	23	36 to 53
Indian Ocean	24	39 to 53
Indian Ocean	25	46 to 67
Indian Ocean	26	46 to 71
Indian Ocean	27	34 to 65
Indian Ocean	28	33 to 51
Iowa	10	69 to 72, 78 to 82 and 87 to 91
Ireland	7	21 to 25
Ireland	8	26 to 48
Isle of Bourbon and [Mauritius.	23	40 to 43
Italy	9	305 to 310
Italy	10	369 to 377
Japan	10	401 and 402
Japan	12	191, 192 and 193
Japan	11	228 (a)
Java	20	45
Kansas	11	58 to 64 and 68 to 76

Name.	No. of zone.	Serial numbers in zone.
Kentucky	11	96, 97, 105, 106, 107 and 110
Labrador	7	17 and 18
Labrador	8	17 and 18
Liberia	17	33
Liberia	18	25
Louisiana	12	83 to 92
Louisiana	13	28 to 33
Madagascar	22	34, 35 and 36
Madeira Islands ...	12	164 and 165 (a)
Maine	9	75 to 81
Maine	10	304 to 315
Maryland	11	128 to 132, 135 to 138 and 148
Massachusetts	10	257 to 260 and 290 to 303
Mediterranean Sea [and its islands.	11	205, 206 and 207
Mediterranean Sea [and its islands.	12	177 and 178
Mexico	13	6, 7 and 8
Mexico	14	7
Mexico	15	6 to 12
Michigan	9	54 to 57, 62 to 65
Michigan	10	115 to 123
Minnesota	9	41 to 51
Minnesota	10	73 to 77
Mississippi	12	93 to 102 and 104
Missouri	10	83
Missouri	11	80 to 89
Montana	9	33 to 37
Navigator's Island	21	4
Nebraska	10	63 to 68
Nevada	10	37 to 43
Nevada	11	31
New Brunswick	9	82
Newfoundland	9	86 and 87
New Granada	16	7
New Granada	17	14 to 19
New Granada	18	16
New Granada	19	
New Hampshire ...	10	274 to 281
New Jersey	10	245 to 248
New Jersey	11	153, 154, 155, 156 & 157
New Mexico	11	38 to 50
New Mexico	12	29 to 43
New York (State)..	10	145 to 160, 168 to 187, 198 to 244 and 268 to 273
New Zealand	26	88 to 90 (a)
New Zealand	27	79 to 82 and 83
New Zealand	28	64, 65 and 66
North Carolina	11	121 to 124, 144 and 145
North Carolina	12	146 to 149
Norway	4	18 and 19
Norway	5	17 to 20
Norway	6	24 to 30
Norway	7	50 (a) to 56
Nova Scotia	9	83, 84 and 85
Nova Scotia	10	316 to 319
Nubia	14	29
Nubia	15	30
Nubia	16	25
Ohio	10	124 to 129
Ohio	11	108, 109, 113, 114 & 115
Oregon	9	24 to 31
Oregon	10	22 to 36
Pacific Ocean	6	1
Pacific Ocean	7	1 to 9
Pacific Ocean	8	3 to 12 and 249 to 251
Pacific Ocean	9	1 to 11 and 375 to 379
Pacific Ocean	10	1 to 10 and 403 to 407
Pacific Ocean	11	1 to 9 and 229 to 233
Pacific Ocean	12	1 to 6 and 194
Pacific Ocean	13	1 to 5 and 98 to 103
Pacific Ocean	14	1 to 6, 41 and 43 to 45

Name.	No. of zone.	Serial numbers in zone
Pacific Ocean	15	1 to 5 and 40 to 43
Pacific Ocean	16	1 to 5 and 43 to 48
Pacific Ocean	17	1 to 10 and 46 to 49
Pacific Ocean	18	1 to 15 and 34 to 41
Pacific Ocean	19	1 to 19 and 49 to 54
Pacific Ocean	20	1 to 14 and 46 to 55
Pacific Ocean	21	1 to 13 and 40 to 45
Pacific Ocean	22	1 to 13 and 48 to 50
Pacific Ocean	23	1 to 17 and 54 to 57
Pacific Ocean	24	1 to 21 and 55 and 56
Pacific Ocean	25	1 to 19 and 72 to 77
Pacific Ocean	26	1 to 26 and 91 to 100
Pacific Ocean	27	1 to 17 and 69 to 78
Pacific Ocean	28	1 to 24 and 52 to 63
Pacific Ocean	29	1 to 26
Paraguay	24	24
Patagonia	29	26½
Pennsylvania	10	135 to 144, 161 to 167 and 188 to 197
Pennsylvania.......	11	127, 132, 149 to 152, 156 and 157
Persia	11	215, 216, 216 (*a*), 218, 220 and 221
Persian Gulf........	13	76
Peru	21	14
Portugal	10	336
Portugal	11	181, 182 and 183
Red Sea..............	14	30
Rhode Island	10	282 to 289
Russia...............	6	37 to 64
Russia	7	91 to 126
Russia	8	218 to 240
Russia	9	351 to 367
Russia	10	382 to 385 and 387 to 397
Sahara. (See Desert of Sahara.)		
Sandwich Islands..	14	2
Scotland	7	26 to 49
Scotland	8	51
Siberia	4	23, 24 and 25
Siberia	5	26 and 27
Siberia	6	65 to 68
Siberia	7	127 to 136
Siberia	8	241 to 248

Name.	No of zone.	Serial numbers in zone.
South Africa........	25	41 to 45
South Carolina.....	12	135 to 145
Southern Africa ...	24	38
Spain	10	333, 334, 335 and 337 to 354
Spain	11	184 to 197
Spitzbergen	3	10 to 14
Sweden..............	5	22 to 25
Sweden..............	6	31 to 36
Sweden..............	7	64 to 90
Switzerland	9	166 to 273
Tartary. (See Turkestan & Central Asia.)		
Tennessee	11	94, 95, 102, 103, 104, 111 and 112
Texas	12	44 to 72
Texas	13	9 to 27 and 33
Thibet	12	188 (*a*)
Tripoli...............	12	173
Tunis.................	11	204
Turkestan. (See also Cent. Asia.)	9	368 to 373
	10	398(*a*)
"	11	222 to 224
Turkey in Asia	10	386
Turkey in Asia	11	209 to 214
Turkey in Asia	12	179 to 184
Turkey in Europe.	10	379
Turkey in Europe.	11	208
Uruguay	25	25
Utah	10	46 to 50
Utah	11	37
Van Dieman's L'd (Tasmania.)	27	66 to 68
Venezuela	16	8 to 12
Vermont............	10	249 to 256
Virginia.............	11	116 to 120, 125, 126 and 139 to 143
Washington Ter....	9	12 to 23
West Indies.........	14	15 to 18
West Indies.........	15	14 to 18
West Indies.........	16	13, 14 and 15
Wisconsin...........	9	52 and 53
Wisconsin...........	10	84 and 92 to 100
Wyoming...........	10	51 to 55

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139. Femaarsberetnung, Holland.
140. Magnetical and Meteorological Observations made at the Government Observatory, Bombay. Robinson and Chambers.
141. Report on Meteorology, Museum, and Horticultural Gardens in the Province of Oudh, Bonavia.
142. Report on the Meteorology of the Punjab. Neil.
143. Iswästia of the Russian Geographical Society, vol. 8. St. Petersburg.
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NUMERICAL INDEX TO STATIONS.

ZONE 1. Lat. 85° to 90° N.

No stations.

ZONE 2. Lat. 80° to 85° N.

1. Smith's Strait, long. 65° to 75° W.
2. Arctic Ocean, long. 5° to 25° E.
3. Arctic Ocean, long. 7° to 17° E.

ZONE 3. Lat. 75° to 80° N.

1. Northumberland Sound.
2. At sea, long. 90° to 97° W.
3. Port Refuge.
4. At sea, long. 80° to 90° W.
5. At sea, long. 70° to 80° W.
6. Port Foulke.
7. Rensselaer Bay.
8. Baffin's Bay, long. 58° to 70° W.
9. At sea, from Greenland to Spitzbergen, long. 17½° W. to 23° E.
10. Magdalena Bay.
11. Hecla Cove.
12. Northern Spitzbergen.
13. Bell Sound and Slaadberg.
14. Henlopen Straits and Eastern Spitzbergen.

ZONE 4. Lat. 70° to 75° N

Western Arctic Ocean and its Islands.

1. Arctic Ocean, long. 155 to 175° W.
2 and 3. Baring's Island.
4. Melville Island.
5. Dealy Island.
6. Assistance Harbor.
7. Felix Harbor, Boothia Felix.
8. Sheriff's Harbor, Boothia Felix.
9. Southeastern Boothia Felix.
10. Port Kennedy.
11. Port Bowen.
12. Arctic Ocean, long. 80° to 110° W.
13. Baffin's Bay, long. 60° to 80° W.
14. Baffin's Bay, long. 50° to 60° W.
15. Upernavik.

Northern Europe and Asia.

16. At sea.
17. Bear Island, near Spitzbergen.
18. Hammerfest.
19. Vardo.
20. Arctic Ocean, long. 20° to 40° E.
21. Nova Zembla.
22. Arctic Ocean, long. 75° to 90° E.

ZONE 4.—*Continued.*

23. Taimurland (Great Northern Tundra).
24. Korennoje Filipooskoje.
25. Ust Yansk.
26. Arctic Ocean, long. 130° to 170° E.
27. Bear Island (northern coast of Siberia).

ZONE 5. Lat. 65° to 70° N.

1. At sea.
2. Port Clarence & Kotzebue Sound.
3. Fort McPherson.
4. Fort Anderson.
5. Fort Franklin.
6. Fort Confidence.
7. Port Hope.
8. Igloolik and vicinity.
9. Winter Island and vicinity.
10. Arctic Ocean.
11. Baffin's Bay
12. Godthaab.
13. Jacobshavn.
14. Eyafiord.
15. Stykkisholm.
16. At sea, long. 15° W. to 15° E.
17. Andennes.
18. Tromsoe.
19. Bossekop.
20. Muonioniska and vicinity.
21. At sea, long. 30° to 40° E.
22. Stensele.
23. Iockmock.
24. Pitea.
25. Haparanda.
26. Nijnii Kolymsk and Anadyrsk.
27. Bush's Station.

ZONE 6. Lat. 60° to 65° N

1. At sea.
2. Plover Bay.
3. Fort St. Michaels.
4. Unalakleet.
5. Ikogmut.
6. Nulato.
6½. Nos. 3, 4 and 6 combined.
7. Fort Norman.
8. Fort Simpson.
9. Fort Rae.
10. Fort Enterprise, Hudson's Bay Territory.
11. Fort Reliance, Great Slave Lake.
12. Baffin's Bay and Hudson's Strait, long. 45° to 80° W.
13. New Hernnhutt.
14. Friederichthal.

ZONE 6.—*Continued.*

15. Bessested.
16. Reikiavik, 1813 and 1840.
17. Reikiavik, 1826–36.
18. Reikiavik, 1866–8.
19. Reikiavik, aggregate.
20. Atlantic Ocean, long. 35° W. to 10° E.
21. Thorshavn.
22. Bressay.
23. East Yell.

Norway and Sweden.

24. Aalesund.
25. Soendmor.
26. Dovre.
27. Christiansund.
28. Drontheim.
29. Bergen.
30. Villa.
31. Ostersund.
32. Fahlun.
33. Gefle.
34. Hernosund.
35. Nos. 33 and 34 combined.
35 (*a*). Holmia.
36. Umea.

Finland.

37. Aland Islands, Baltic Sea.
38. Laichela.
39. Storkiro.
40. Varo.
41. Ilmola.
42. Western Finland.
43. Lemo Ganula.
44. Abo.
45. Southwestern Finland.
46. Galiko.
47. Tammela.
49–51. Helsingfors.
52. Sweaborg.
53. Hogland Lighthouse.
54. Southern Finland.
55. Virdois.
56. Laukas.
57. Kalaioki.
58. Uleaborg.
59. Kajan and Paldamo.

Russia.

60. Petrozavodsk.
61. Kem.
62. White Sea.
63. Archangel.
64. Yarensk.
65. Bache Aktolik.
67. Amginsk.
68. Yacoutsk.
69. Ghijiga.

ZONE 6.—*Continued.*

70. Penjinsk Gulf.
71. Anadyr River.

ZONE 7. Lat. 55° to 60° N.

Pacific Ocean.

1. Long. 170° E. to 165° W.
2. Long. 160° to 170° W.
3. Long. 155 to 165 W.
4. Long. 150 to 155 W.
5. Long. 145 to 150 W.
6. Long. 130 to 165 W.
7. Long. 140 to 145 W.
8. Long. 135 to 145 W.
9. Long. 130 to 140 W.

North America.

10. Fort Kodiak.
11. Sitka.
12. Fort Wrangel.
13. Fort Chipewayan.
14. Norway House.
15. Fort Prince of Wales.
16. York Factory.
17. Little Whale River.
18. Nain River.

Atlantic Ocean.

19. Long. 20° to 65° W.
20. Long. 5 to 20 W.

Ireland.

21. Londonderry.
22. Buncrana.
23. Slieve Snaght.
24. Portrush.
25. Northern Ireland.

Western Scotland.
West of long. 4°.

26. Stornoway (1857 to 1867).
27. Lat. 58° to 59°.
28. Culloden (1857 to 1867).
29. Lat. 57° to 58°.
30. Callton-Mor (1857 to 1867).
31. Lat. 56° to 57°.
32. Castle Toward.
33. Lat. 55° to 56°.

Eastern Scotland.
East of long. 4°.

34. Sandwick.
35. Orkney Islands.
36. Wick.
37. Banff Castle.
38. Elgin, 1835, 6 and 7.
39. Lat. 57° to 58°.
40. Kinfauns Castle.
41. Clunie Manse.
42. Inchkeith.
43. Lat. 56° to 57°.
44. Calton Hill (Edinburgh).
45. Inveresk.
46. Bromholm.
47. Makerstown, No. of observations.
48. Makerstown, sums of forces.
49. Lat. 55° to 56°.
50. North Sea.
50(*a*). Skudesnes.
51. Lister.
52. Lindensnes.

ZONE 7.—*Continued.*

53. Mandal.
54 Spydburg.
55. Sandosund.
56. Christiana.
57. Tarum.
58. Smidstrup.
60. Skagen.
61. Hofmansgave.
62. Copenhagen, 1783–5.
63. Copenhagen, 1808 to 1869.
63(*a*). Nos. 62 and 63 combined
63(*b*). Christiansoe.

Southern Sweden

64. Goteborg.
65. Wenersborg.
66. Halmstad.
67. Cronberg.
68. Lund.
69. Nos. 67 and 68 combined.
70. Jonkoping.
71. Carlstad.
72. Wexio.
73. Carlshamn.
74. Askersund.
75. Crebro.
76. Nos. 74 and 75 combined.
77. Skara.
78. Linkoping.
79. Nos. 77 and 78 combined.
80. Kalmar.
81. Westervik.
82. Nykoping.
83. Westeras.
84. Upsal.
85–6. Stockholm.
87. Nos. 83, 84 and 85 combined.
88. Wisby.
89. Southwestern Sweden.
90. Southeastern Sweden.

Russia.

91. Libau.
92. Pakerort.
93. Mitau.
94–5. Riga.
96. Mitau and Riga combined.
97. Baltischport.
98. Reval.
99. Fellin.
100. Avandus.
101. Dorpat.
102. Cronstadt.
103. St. Petersburg.
104. Nos. 102 and 103 combined.
105. Novogorod.
106. Witenewo.
107. Moscow.
108. Syevernaja Ferma.
109. Wologda.
110. Gryasovez.
111. Vladimir.
112. Kostroma.
113. Totma.
114. Gorbatov.
115. Balachna.
116. Northern Central Russia, long. 40° to 45° E.
117. Kosmodemiansk.
118. Nijnii Novogorod.
119. Ichak.
120. Kazan.
121. Viatka.
122. Slobodsk.

ZONE 7.—*Continued.*

123. Glasof.
124. Northeastern Russia.
125. Zlatouste.
126. Nijnii Taguilsk.

Siberia.

127. Bogoslowsk.
128. Galanowsk.
129. Catherinenburg.
130. Kourgan.
131. Tobolsk.
132. Ichim.
133. Tara.
134. Tomsk.
135. Nasimowo.
135(*a*). Jenisseisk.
135(*b*). Krasnojarsk.
136. Ajan.

ZONE 8. Lat. 50° to 55° N.

1. Aleutian Islands.
2. Iluluk.

Pacific Ocean.

3–12. Long. 125° to 165° W.
13. Fort Tongass.
14. Fort a la Corné.
15–16. Red River Settlement.
16(*a*). Moose Factory.
17. Winowkupa.
18. Rigolet.

Atlantic Ocean.

19. Long. 20° to 65° W.
20. Long. 20 to 55 W.
21. Long. 20 to 40 W.
22. Long. 15 to 20 W.
23. Long. 10 to 15 W.
24. Long. 0 to 10 W.
25. Long. 0 to 65 W.

Ireland. South of lat. 55°.

26. Milltown.
27. Ballina.
28. Markree.
29. Killybegs.
30. Armagh.
31. Killough.
32. Donagadee.
33. Lat. 54° to 55°.
34. Bencorr.
35. Westport.
36. Portarlington.
37. Athy.
38. Dublin.
39. Lat. 53° to 54°.
40. Kilrush.
41. Limerick.
42. Dunmore.
43. Courtown.
44. Lat. 52° to 53°.
45. Cahirciven.
46. Castletownshend.
47. Cork.
48. Lat. 51° to 52°.
49. Isle of Man.
50. Calf of Man.
51. Slogarie.
52. Swansea.
53. Aberavon.
54. Lampeter.
55. Llandudno.

ZONE 8.—*Continued.*

England.

56. Cockermouth.
57. Keswick.
58. Carlisle.
59. Kendal.
60. Lancaster.
61. Allenheads.
62. Silloth.
63. North Shields.
64. Ripon.
65. New Malton.
66. England, north of lat. 54°.
67. Liverpool.
68. Hawarden.
69. Eccles.
70. Manchester.
71. Kingsley's Parsonage.
72. Stonyhurst.
73. Halifax.
74. Otley.
75. Wakefield.
76. Leeds.
77. York.
78. Mansfield Woodhouse.
79. Hull.
80. England, lat. 53° to 54°.
81. Holkham.
82. Stratford.
83. Derby.
84. Nottingham.
85. Alderley Rectory.
86. Wisbech.
87. Grantham.
88. Cardington.
89. Boston and Cambridge.
90. Royston.
91. Thetford.
92. Norwich.
93. Southwich.
94. England, lat. 52° to 53°.
95. Barnstable.
96. Wilton.
97. Bristol.
98. Clifton.
99. Bath.
100. Gloucester.
101. Cheltenham.
102. Marlboro' College.
103. Streatly Vicarage.
104. Oxford.
105. Strathfield Turgiss.
106. Aldershot Camp.
107. High Wycombe.
108. Weybridge Heath.
109. Chiswick.
110. Camden Town.
111. London.
112–113. Greenwich.
114. Bushey Heath.
115. Delphen.
116. Epping.
117. Tunbridge Wells.
118. England, lat. 51° to 52°.
119. Penzance.
120. Helston, 1822 to 1825.
121. Helston, 1822, 25 and 67 to 68.
122. Truro.
123. Devonport.
124. Exeter.
125. Sidmouth.
126. Southwestern England.
127. Bournemouth.
128. Gosport.
129. Osborne.
130. Sturbington.
131. Worthing.

ZONE 8.—*Continued.*

132. Eastbourne.
133. Southern and Southeastern England.

France and Belgium.

134. Abbeville.
135. Dunkerque.
136. Lille.
137. Cambray.
138. Northern France.
139. Ghent.
140. Alost.
141. Brussels.
142. Louvain.
143. Belgium.

Holland.

144. Vlissingen.
145. Hellevoetsluis.
146. Breda.
148. Nymegen.
149. Maastricht.
150. Utrecht.
151. Southern Holland.
152. Zwanenburg.
153. Amsterdam.
154. Haarlem.
155. De Helder.
156. Franeker.
157. Leeuwarden.
158. Assen.
159. Groningen.
160. Northern Holland.

Northwestern Germany.

161. Dusseldorf.
162. Stone Lighthouse.
163. Norderney.
164. Emden.
165. Munster.
166. Cruxhaven.
167. Bremen.
168. Hanau.
169. Hamburg.
170. Luneberg.
171. Cottbus.
172. Paderborn.
173. Rhenish Prussia.
174. Gottingen.
175. Mulhausen.
176. Brocken.
177. Gotha.
178. Kiel.
179. Apenrade.
180. Aggregate.

Northern Germany.

181. Aschersleben.
182. Alstedt.
183. Erfurth.
184. Weimar.
185. Jena.
186. Ilmenau.
187. Saxe-Weimar.
188. Frankenheim.
189. Hof.
190. Northern Bavaria.
191. Dessau.
192. Leipsic.
193. Strehla.
194. Schöndorf.
195. Dresden.
196. Saxony.
197. Berlin.
198. Putbus.

ZONE 8.—*Continued.*

Bohemia, Silesia and Poland.

199. Schonthal.
200. Schœssl.
201. Purglitz.
202. Smecna.
203. Bodenbach.
204. Northwestern Bohemia.
205. Prague.
206. Koniggratz.
207. Sinftenberg.
208. Northeastern Bohemia.
209. Sagan.
210. Posen.
211. Breslau.
212. Dantzic.
213. Braunsberg.
214. Cracow.
215. Pillau.
216. Konigsberg.
217. Warsaw.
218. Northeastern Prussia.

Russia.

218(*a*). Brestlitowsk.
219. Wilna.
220. Minsk.
221. Kiev.
222. Gorki.
223. Smolensk.
224. District of Elnia.
225. Kalouga.
226. Orel.
227. Koursk.
228. Woltschansk.
229. Tula.
230. Voronesch.
230(*a*). Tambof.
231. Southern Central Russia.
232. Krutez.
233. Pensa.
234. Saratov, Russia.
235. Samarskaja Ferma.
235½. Samara.
236. Uralsk.
237, 238 and 239. Orenburg.
240. Ufa.

Siberia.

241. Semipalatinsk.
242. Barnaul.
243. Irkutsk.
244. Nertchinsk.
245. Udskoi.
246. Nikolaievsk.
247. Douai Lighthouse.
248. Petropaulowski.

Pacific Ocean.

249. Long. 135° to 150° E.
250. Long. 140 to 150 E.
251. Long. 160 to 170 E.

ZONE 9. Lat. 45° to 50° N.

Pacific Ocean.

1 to 11. Long. 120° to 165° W.
7. Long. 120 to 165° W. aggregate.

Washington.

12. Neeah Bay.
13. San Juan Island.
14. Port Townshend.
15. Camp Semiahmoo and Fort Bellingham.

ZONE 9.—*Continued.*

188. Schaffhausen.
189. Kaiserstuhl.
190. Affoltern.
191. Zurich.
192. Uetliberg.
193. Frauenfeld.
194. Winterthur.
195. Kreuslingen.
196. Northern Switzerland.

Central and Southern Switzerland.

197. Vaudens.
198. Schwarzenberg.
199. Fribourg.
200. Valsainte.
201. Berne.
202. Beatenberg.
203. Brienz.
204. St. Imier.
205. Weissenstein.
206. Solothurn.
208. Sursee.
209. Interlaken.
210. Grindewald.
211. Muri.
212. Rathausen.
213. Stanz.
214. Engelberg.
215. Grimsel.
216. Reckigen.
217. Zug.
218. Rigi Kulm.
219. Schwyz.
220. Gersau.
221. Altdorf.
222. Andermatt.
223. Airolo.
224. Einsiedeln.
225. Platta.
226. Faido.
227. Glaurus.
228. Lugano.
229. St. Vittore.
230. Auen.
231. Bernhardin.
232–233. St. Gothard.
234. Faulhorn.
235. Airolo.
236. Nos. 232 and 233 combined.
237. Aggregate 197–236.
238. Bex.
239. Martigny.
240. St. Bernard.
241. Sion.
242. Gliss.
243. Grachen.
244. Zermatt.
245. Simplon.
246. Bellinzona.
247. Mendrisio.
248. Aggregate 238 to 247.

Eastern Switzerland.

249. St. Gallen.
250. Wildhaus.
251. Riechenau.
252. Ilanz.
253. Thusis.
254. Splugen.
255. Trogen.
256. Altstatten.
257. Sargans.
258. Marschlins.
259. Chur.
260. Churwalden.

ZONE 9.—*Continued.*

261. Castasegua.
262. Closters.
263. Davos.
264. Bevers.
265. Julier.
266. Stalla.
267. Sils.
268. Zernetz.
269. Bernina.
270. Brusio.
271. Remus.
272. Schuls.
273. Aggregate.

Luxemburg and Southern Germany.

274. Luxemburg.
275. Treves (Trier).
276. Carlsruhe.
277–278. Manheim.
279. Northern Baden.
280. Mergentheim.
281. Tutlingen.
282. Stuttgard.
283. Schussenreid.
284. Issny.
285. Wurtemberg.
286–287. Wurtzburg.
288. Giengen.
289. Uffenheim.
290. Anspach.
291. Gunzenhausen.
292. Giengen on the Brenz.
293. Neustadt.
294. Bamberg.
295. St. Andex.
296. Western Bavaria.
297. Southern and Southwestern Bavaria.
298. Ingolstadt.
299. Peissenberg.
300. Munich.
301. Tegern See.
302. Ratisbon.
303. Burglengenfeld.
304. Central Bavaria.

Northern Italy.

305. Turin.
306. Milan.
307. Padua.
309. Udine.
310. Venetia.

Austrian Empire.

311. Ittendorf.
312. Hohenpeissenberg.
313. Botzen.
314. Tyrol.
315. Sagriz.
316. St. Peter.
317. Hoch Obir.
318. Klagenfurth.
319. St. Paul.
320. Northern Illyria.
321. Trieste.
322. Adelsberg.
322½. San Lorenzo.
323. Southern Illyria.
324. Salzburg.
325. Kremsmunster.
326. Nos. 324 and 325 combined.
327. Pilsen.
328. Steubenbach.
329. Winterberg.

ZONE 9.—*Continued.*

330. Southwestern Bohemia.
331. Deutschbrod.
332. Selan.
333. Czaslau.
334. Southeastern Bohemia.
335. Graetz.
336. Vienna.
337. Vienna and Schonthal.
338. Brunn.
339. Olmutz.
340. Moravia.
341. Wartburg.
342. Funfkirchen.
343. Buda.
344. Althofen.
345. Nos. 343 and 344 combined.
346. Debreczin.
347. Hermannstadt.
348. Lemberg.
349. Stanislau.
350. Eastern Galicia.

Russia and Sea of Azof.

351. Kischinev.
352. Dniestrooski Znak.
353. Odessa.
354. Otchakof.
355. Northern shore of Black Sea.
356. Nikolaief.
357. Poltava.
358. Ekaterinoslav.
359. Orlov.
360. Kertsch.
361. Charkov.
362. Sea of Azof.
363. Taganrog.
364. Lougan.
365. Nijne Tchirsk.
366. Astrachan.
367. Gouriev.

Central and Eastern Asia.

367(*a*). Kirghiz steppes.
368. Fort Ouralsk.
369. Fort Aralsk.
370. Fort No. 1.
371. Sir Daria.
372. Fort Perowski.
373. Valley of Sir Daria.
374. Urga.
374(*a*). Aniva Bay.

Pacific Ocean.

375. Long. 130° to 140° E.
376. Long. 135 to 145 E.
377. Long. 135 to 150 E.
378. Long. 140 to 150 E.
379. Long. 145 to 150 E.

ZONE 10. Lat. 40° to 45° N.

Pacific Ocean.

1. Long. 160° to 165° W.
2–9. Long. 130° to 160° W.
10. Long. 120° to 130° W.

California. North of lat. 40°.

11. Fort Humboldt.
12. Fort Lincoln.
13. Fort Ter-Waw.
14. Camp Gaston.
15. Fort Jones.
16. Northwestern California.

ZONE 10.—*Continued.*

17. Fort Reading.
18. Fort Crook.
19. Camp Bidwell.
20. Meadow Valley.
21. N. E. California.

Oregon. South of lat. 45°.

22. Fort Oxford.
23. Fort Umpqua.
24. Fort Lane.
25. Southwestern Oregon.
26. Fort Hoskins.
27. Block House.
28. Western Oregon.
29. Fort Klamath.
30. Camp Warner.
31. Southern Oregon.
32. Camp Watson.
33. Eastern Oregon.
34. Camp Harney.
35. Camp Three Forks.
36. Southeastern Oregon.

Nevada. North of lat. 40°.

37. Northwestern Nevada.
38. Camp McDermit.
39. Camp Winfield Scott.
40. Northern Nevada.
41. Camp Halleck.
42. Fort Ruby.
43. Northeastern Nevada.

Idaho. South of lat. 45°.

44. Southwestern Idaho.
45. Southeastern Idaho.

Utah. North of lat. 40°.

46. Camp Douglas.
47. Great Salt Lake City, 1857.
48. Northern Central Utah.
49. Fort Bridger.
50. Northeastern Utah.

Wyoming.

51. Western Wyoming.
52. Northeastern Wyoming.
53. Fort Saunders.
54. Fort Laramie.
55. Southeastern Wyoming.

Colorado. North of lat. 40°.

56. Fort Morgan.
57. Fort Sedgwick.
58. Northeastern Colorado.

Dacotah. South of lat. 45°.

59. Fort Pierre.
60. Southern Central Dacotah.
61. Fort Randall.
62. Southeastern Dacotah.

Southern and Northeastern Nebraska.

63. Fort Kearny.
64. Southern Nebraska.
65. Northeastern Nebraska.

Southeastern Nebraska.

66. Council Bluffs.
67. Bellevue and Omaha, 1857.
68. Aggregate.

ZONE 10.—*Continued.*

Northwestern Iowa.

69. Sioux City, 1857.
70. Aggregate.

Southwestern Iowa.

71. Saint Mary's, January and February, 1854.
72. Aggregate.

Minnesota. South of lat. 45°.

73. Fort Ridgely.
74. Source of the Des Moines.
75. Southwestern Minnesota.
76. Fort Snelling.
77. Southeastern Minnesota.

Northern Iowa.

78. Fort Dodge.
79. Border Plains, 1856 and 1857.
80. Aggregate.

Southern Iowa and Missouri, North of lat. 40°.

81. Fort Des Moines.
82. Southern Iowa.
83. Northern Missouri.

Western and Central Wisconsin.

84. Surface wind.
85. Motion of clouds.
86. Two preceding combined.

Northeastern Iowa.

87. Fort Atkinson.
88. Smithsonian Stations, 1854–57.
89. Aggregate.

Southeastern Iowa.

90. Smithsonian Stations, 1854–57.
91. Aggregate.

Southwestern Wisconsin.

92. Prairie du Chien.
93. Aggregate.

Eastern Wisconsin.

94. Fort Howard.
95. Fort Winnebago.
96. Smithsonian Stations, 1854–57.
97. Aggregate.

Southeastern Wisconsin.

98. Fort Atkinson.
99. Smithsonian Stations, 1854–57.
100. Aggregate.

Western Illinois. Lat 40° to 41°.

101. Smithsonian Stations, 1854–57.
102. Aggregate.

Northwestern Illinois. North of lat. 41°.

103. Rock Island.
104. Aggregate.

Northeastern Illinois.

105. Chicago (Fort Dearborn).
106. Smithsonian Stations, 1854–57.
107. Aggregate.

ZONE 10.—*Continued.*

Eastern Illinois. Lat. 40° to 41°.

108. West Urbana, 1857.
109. Aggregate.

Northwestern Indiana.

110. Smithsonian Stations, 1854–57.
111. Aggregate.

Northeastern Indiana.

112. Brockville.
113. Kendallville, 1854.
114. Aggregate.

Southwestern Michigan.

115. Smithsonian Stations, 1854–57.
116. Aggregate.

Michigan. Lat. 43° to 45°.

117. Grand Traverse, 1854.
118. Aggregate of all stations.

Southeastern Michigan.

119. Detroit.
120. Dearbornville Arsenal.
121. Detroit Barracks.
121(*a*). Fort Gratiot.
122. Smithsonian Stations, 1854–57.
123. Aggregate of all stations.

Northwestern Ohio.

124. Smithsonian Stations, 1854–57.
125. Aggregate of all stations.

Northeastern Ohio.

126. Steubenville, 1833 to 1846.
127. Western Reserve College, Hudson, Ohio.
128. Smithsonian Stations, 1854–57.
129. Aggregate of all stations

Canada. South of lat. 45°.

130. Southwestern Canada.
131–2. Toronto.
133. Two preceding combined.
134. Kingston.

Northwestern Pennsylvania.

135. Meadville.
136. Franklin, 1841.
137. Smithsonian Stations, 1854–57.
138. Aggregate of all stations.

Western Pennsylvania and Virginia. North of lat. 40°.

139. Alleghany Arsenal.
140. Pittsburg.
141. Butler.
142. Somerset.
143. Smithsonian Stations, 1854–57.
144. Aggregate.

Western New York.

145. Fredonia.
146. Fort Niagara.
147. Buffalo Barracks.
148. Lewiston.
149. Buffalo Academy.
150. Springville.
151. Millville.
152. Gaines.

ZONE 10.—*Continued.*

153. Middlebury.
154. Henrietta.
155. Rochester.
156. Prattsburg.
157. Canandaigua.
158. Cuba.
159. Smithsonian Stations, 1854–57.
160. Aggregate.

Northern Pennsylvania.

161. Smithport.
162. Aggregate.

Central Pennsylvania.

163. Ebensburg.
164. Bedford.
165. Carlisle Barracks.
166. Smithsonian Stations, 1854–57.
167. Aggregate.

Central New York.

168. Seneca Falls.
169. Ledyard.
170. Ithaca.
171. Auburn.
172. Oswego (Fort Ontario).
173. Syracuse.
174. Mexico.
175. Homer.
176. Belleville (Ellisburgh).
177. Onandaga.
178. Pompey.
179. Cazenovia.
180. Hamilton.
181. Oxford.
182. Bridgewater.
183. Whitesboro'.
184. Utica.
185. Hartwick.
186. Smithsonian Stations, 1854–57.
187. Aggregate.

Northeastern Pennsylvania.

188. Silver Lake.
189. Berwick, 1856 and 1857.
190. Aggregate.

Eastern Pennsylvania.

191. Northumberland.
192. Lancaster.
193. Newtown, 1841.
194. Easton.
195. Smithsonian Stations, 1854–57.
196. Aggregate.

Northeastern New York.

198. Sackett's Harbor.
198(*a*). Watertown Arsenal.
199. Lowville.
200. Gouverneur.
201. Potsdam.
201(*a*). Ogdensburgh.
202. Somerville.
203. Malone.
204. Plattsburgh Academy.
205. Plattsburgh Barracks.
206. Two preceding combined.
207. Rouse's Point (1839)
208. Smithsonian Stations, 1854–57.
209. Aggregate.

Eastern New York.

210. Delhi.
211. Fairfield.

ZONE 10.—*Continued.*

212. Cherry Valley.
213. Canajoharie.
214. Greenville.
215. Johnstown.
216. Schenectady.
217. Kingston.
218. Hudson.
219. Albany.
220. Lansingburgh.
221. Watervleit.
222. Kinderhook.
223. Salem.
224. Cambridge.
225. Granville.
226. Smithsonian Stations, 1854–57.
227. Aggregate.

Southeastern New York.

228. Goshen.
229. Newburgh.
230. Bloomingdale.
231. Fort Columbus.
233–4. New York City.
235. Montgomery.
236. Poughkeepsie.
237. West Point.
238. Redhook.
239. Mount Pleasant.
240. North Salem.
241. Amenia.
241(*a*). White Plains.
242. Smithsonian Stations, 1854–57.
243. Aggregate.
244. State of New York (aggregate previous to the year 1849).

Northern and Central New Jersey.

245. Trenton.
246. Middleton.
247. Smithsonian Stations, 1854–57.
248. Aggregate.

Northern Vermont.

249. Burlington.
250. Newbury.
251. Smithsonian Stations, 1854–57.
252. Aggregate.

Southern Vermont.

253. Rutland.
254. Fayetteville.
255. Smithsonian Stations, 1854–57.
256. Aggregate.

Western Massachusetts.

257. Williamstown.
258. Amherst.
259. Smithsonian Stations, 1854–57.
260. Aggregate.

Connecticut.

261. Salisbury.
262. Litchfield.
263. New Haven.
264. Fort Trumbull.
265. Hampton.
265(*a*). Wallingford.
266. Smithsonian Stations, 1854–57.
267. Aggregate.

Long Island.

268. Flatbush.
269. Fort Hamilton.

ZONE 10.—*Continued.*

270. Jamaica.
271. Easthampton.
272. Smithsonian Stations, 1854–57.
273. Aggregate.

Northern New Hampshire.

274. Mt. Washington.
275. Hanover.
276. Smithsonian Stations, 1854–57.
277. Aggregate.

Southern New Hampshire.

278. Fort Constitution.
279. Dover.
280. Smithsonian Stations, 1854–57.
281. Aggregate.

Rhode Island.

282. Fort Wolcott.
283. Fort Adams.
284–5. Brown University, Providence.
286. Friends' School, Providence.
287. Newport.
288. Smithsonian Stations, 1854–57.
289. Aggregate.

Northeastern Massachusetts.

290. Worcester, 1840 to 1853, inclusive.
291. Waltham.
292. Boston.
293. Fort Independence.
294. Ipswich.
295. Smithsonian Stations, 1854–57.
296. Aggregate.

Southeastern Massachusetts.

297. Mendon.
298. New Bedford.
299. Smithsonian Stations, 1854–57.
300. Aggregate.

Cape Cod and adjacent Islands.

301. Nantucket.
302. Smithsonian Stations, 1854–57.
303. Aggregate.

Southwestern Maine.

304. Saco.
305. Brunswick.
306. Fort Preble.
307. Bath.
308. Smithsonian Stations, 1854–57.
309. Aggregate.

Southern Maine.

310. Hampden.
311. Aggregate.
311½. Carmel, 1854–57.

Southeastern Maine.

312. Eastport.
313. Smithsonian Stations, 1854–57.
314. Aggregate.
315. New England, south of lat. 45°.

Southern Nova Scotia.

316–7. Windsor.
318. Halifax.
319. Nos. 317 and 318 combined.

ZONE 10.—*Continued.*

Atlantic Ocean.

320–9. Long. 30° to 75° W.
330. Long. 20° to 30° W.
331. Long. 0° to 20° W.
332. Long. 0° to 45° W.

Portugal and Spain. North of lat. 40°.

333. Santiago.
334. Corunna.
335. Northwestern Spain
336. Oporto.
337. Oviedo.
338. Leon.
339. Burgos.
340. Bilbao.
341. Cantabria.
342. Vergara.
343. Northern Spain.
344. Salamanca.
345. Valladolid.
346. Villaviciosa.
347. Madrid.
348. Soria.
349. Northern Central Spain.
350. Saragossa.
351. Huesca.
352. Balaguer.
353. Barcelona.
354. Northeastern Spain.

Southern France.

355–6. Bordeaux.
357. Two preceding combined.
358. Pau.
359. Eaux Bonnes.
360. Bagneres de Bigorre.
361. Toulouse.
362. Southwestern France.
363. Rodez.
364. Montpelier.
365. St. Hyppolite de Caton.
366. Orange.
367. Marseilles.
368. Southeastern France.

Italy, Dalmatia, Turkey, and the Black Sea.

369. Nice.
370. Mentone.
371. Genoa.
372. St. Zeno.
373. Parma.
374. Bologna, 1814 to 1858.
375. Rome.
376. Naples.
377. Nos. 375 and 376 combined.
378. Ragusa.
379. Constantinople.
380. Black Sea (west of long. 35° E.).
381. Black Sea (east of long. 35° E.).

Southeastern Russia, Asia Minor, and Transcaucasia.

382. Sebastopol.
383–4. Simferopol.
385. Southern Crimea.
386. Trebizond.
387. Stavropol.
388. Redoutkaleh.
389. Koutais.
390. Alexandroskaya.
391. Alexandropol.
392. Tiflis.

ZONE 10.—*Continued.*

393. Northern Georgia.
394. Alagyr.
395. Derbend.
396. Bakou.

Central and Eastern Asia.

397. Novo Petrovsk.
398. Central Turkestan.
399. New Chwang.
400. Foordan.
400(*a*). Possiet Bay.
400(*b*). Olga Bay.
401. Hakodade.

Pacific Ocean.

403. Long. 125° to 135° E.
404. Long. 120 to 150 E.
405. Long. 135 to 140 E.
406. Long. 140 to 145 E.
407. Long. 145 to 150 E.

ZONE 11. Lat. 35° to 40° N.

Pacific Ocean.

1. Long. 160° to 165° W.
2. Long. 155 to 160 W.
3. Long. 150 to 155 W.
4. Long. 145 to 150 W.
5. Long. 130 to 165 W.
6. Long. 140 to 145 W.
7. Long. 130 to 140 W.
8. Long. 125 to 130 W.
9. Long. 120 to 125 W.

California. Lat. 39° to 40°.

10. Fort Bragg.
11. Camp Wright.
12. Long. 122° to 124° W.
13. Camp Far West.
14. Truckee.
15. Long. 120° to 122°.

California. Lat. 38° to 39°.

16. Benicia.
17. Long. 122° to 123° W.
18. Sacramento, 1853 to 1859.
19. Long. 121° to 122° W.
20. Long. 120° to 121° W.
21. San Francisco, Sacramento, Stockton, and Marysville, 1854 to 1857 inclusive.

California. Lat. 37° to 38°.

22. Alcatraz Island.
23. Angel Island.
24, 25. San Francisco.
26. Long. 121° to 123° W.
27. Long. 120° to 121° W. (Fort Miller.)

California. Lat. 36° to 37°.

28. Monterey.
29. Long. 121° to 122° W.
30. Camp Independence.

Western Nevada.

31. Fort Churchill.

Arizona. North of lat. 35°.

32. Camp El Dorado.
33. Fort Mojave.

ZONE 11.—*Continued.*

34. Camp Willow Grove.
35. Northwestern Arizona.
36. Northeastern Arizona.

Southwestern Utah.

37. Aggregate.

New Mexico. North of lat. 35°.

38. Fort Wingate.
39. Cebolletta and Laguna.
40. Northwestern New Mexico.
41. Camp Plummer and Fort Lowell.
42. Cantonment Burgwin.
43. Northern New Mexico.
44. Santa Fe.
45. Albuquerque.
46. Northern Central New Mexico.
47. Las Vegas.
48. Fort Union.
49. Fort Bascom.
50. Northeastern New Mexico.

Colorado. South of lat. 40°.

51. Central Colorado.
52. Fort Garland.
53. Fort Massachusetts.
54. Southern Colorado.
55. Fort Reynolds.
56. Forts Lyon and Wise.
57. Southeastern Colorado.

Kansas. West of long. 97°.

58. Fort Atkinson.
59. Fort Dodge.
60. Southwestern Kansas.
61. Donner's Station.
62. Fort Hayes.
63. Fort Larned.
64. Western Central Kansas.

Northeastern Indian Territory.

65. Fort Gibson.
66. Fort Wayne.
67. Aggregate.

Kansas. East of long. 97°.

68. Fort Riley.
69. Eastern Central Kansas.
70. Fort Leavenworth.
71. Northeastern Kansas.
72. Eastern Kansas.
73. Smithsonian Stations in Eastern, Central, Northeastern, and Eastern Kansas, 1854–57.
74. Fort Scott.
75. Baxter Springs.
76. Southeastern Kansas.

Arkansas. North of lat. 35°.

77. Fort Smith.
78. Northwestern Arkansas.
79. Northeastern Arkansas.

Missouri. South of lat. 40°.

80. Western and Central Missouri.
81. Southwestern Missouri.
82. St. Joseph's.
83. Jefferson Barracks.
84, 85, 86. St. Louis.
87. Eastern Missouri.
88. Cape Girardeau, 1856 and 1857.
89. Southeastern Missouri.

ZONE 11.—*Continued.*

Southwestern Illinois.

90. Smithsonian Stations, 1854–57.
91. Aggregate.

Southeastern Illinois.

92. West Salem, 1856 and 1857.
93. Aggregate.

Western Tennessee.

94. Smithsonian Stations, 1854 and 1855.
95. Aggregate.

Western Kentucky.

96. Bowling Green, autumn, 1855.
97. Aggregate.

Southwestern Indiana.

98. Smithsonian Stations, 1854–57.
99. Aggregate.

Southeastern Indiana.

100. Smithsonian Stations, 1854–57.
101. Aggregate.

Middle Tennessee.

102. Nashville.
103. Smithsonian Stations, 1854–57.
104. Aggregate.

Northern and Central Kentucky.

105. Newport Barracks.
106. Smithsonian Stations, 1854–57.
107. Aggregate.

Southwestern Ohio.

108. Smithsonian Stations, 1854–57.
109. Aggregate.

Northeastern Kentucky.

110. Northeastern Kentucky.

Eastern Tennessee.

111. Smithsonian Stations, 1854–57.
112. Aggregate.

Southeastern Ohio.

113. Marietta.
114. Smithsonian Stations, 1854–57.
115. Aggregate.

Northwestern Virginia.
South of lat. 40°.

116. Smithsonian Stations, 1854–57.
117. Aggregate.

Central Virginia.

118. Smithsonian Stations, 1854–57.
119. Aggregate.

Southern Virginia.

120. Aggregate.

Western and Middle North Carolina.

121. Western North Carolina.
122–3. Chapel Hill.
124. Middle North Carolina.

ZONE 11.—*Continued.*

Northeastern Virginia.

125. Smithsonian Stations, 1854–57.
126. Aggregate.

Southern Pennsylvania.

127. Aggregate.

Northern Maryland.

128. Baltimore (Maryland Academy).
129–30. Fort McHenry.
131. Aggregate.

Southern Pennsylvania and Northern Maryland.

132. Smithsonian Stations, 1854–57.

District of Columbia and Southern Maryland.

133. U.S. Naval Observatory.
134. Washington, D.C.
135. Fort Severn.
136. Fort Washington.
137. Smithsonian Stations, 1854–57.
138. Aggregate.

Southeastern Virginia.

139. Bellona Arsenal.
140–1. Old Point Comfort.
142. Smithsonian Stations, 1854–57.
143. Aggregate.

Eastern North Carolina.

144. Smithsonian Stations, 1854–57.
145. Aggregate.

Delaware.

146. Fort Delaware.
147. Aggregate.
148. Delaware, Maryland, and Eastern Virginia.

Southeastern Pennsylvania.

149. Fort Mifflin.
150. Franklin Institute, Phila.
151. Aggregate.
152. Girard College.

Southern New Jersey.

153. Surface winds.
154. Motion of clouds.
155. The two combined.
156. Delaware, Southeastern Pennsylvania, and Southern New Jersey.
157. Smithsonian Stations, 1854–57.

Atlantic Ocean.

158–163. Long. 45° to 75° W.
164. Long. 45° to 75° W.
165–8. Long. 25° to 45° W.

Azores.

169. St. Michael's.
170. Terceira.
171. Fayal.
172. Graciosa.
173. St. Mary's.
174. Aggregate.
175. St. Michael's, 1860–9.
175(*a*). Horta, Fayal.
175(*b*). Horta, Fayal.

ZONE 11.—*Continued.*

Atlantic Ocean.

176–8. Long. 10° to 25° W.
179. Long. 0° to 10° W.
180. Long. 0° to 45° W.

Portugal and Spain.
South of lat. 40°.

181. Polytechnic School.
182. Lisbon.
183. Mafra.
184. Southwestern Spain.
185. Seville.
186. Tarifa.
187. Gibraltar.
188. Jaen.
189. Granada.
190. Southern Spain.
191. Southern Central Spain.
192. Albacete.
193. Murcia.
194. Alicante.
195. Valencia.
196. Southeastern Spain.
197. Palma.

Northern Algeria.

198. Arzew.
199–201. Oran and Mostaganem.
201½. Algiers.
202. Setif.
203. Oum Theboul.
204. City of Tunis, Northern Africa.

Islands of the Mediterranean Sea and Southern Turkey.

205. Malta.
206. Corfu.
207. Syra.
208. Janina.

Turkey in Asia.

209. Smyrna.
210. Tarsus.
211. Cæsarea.
212. Aleppo.
213. Erzeroom.
214. Mosul.

Southern Transcaucasia and Northern Persia.

215. Ooroomiah.
216. Mt. Seir.
217. Aralikh.
218. Tabreez.
219. Lenkoran.
220. Tehran.
221. Astrabad.

Turkestan.

222. Merve and Shurukhs.
223. City of Bokhara.
224. Kara Korum Mountains, Leh and Yarkund.

Northeastern China.

225–27. Pekin.
228. Chefoo.

Pacific Ocean.

229. Long. 125° to 135° E.
230. Long. 130 to 140 E.
231. Long. 135 to 140 E.
232. Long. 125 to 150 E.
233. Long. 140 to 150 E.

ZONE 12. Lat. 30° to 35° N.

Pacific Ocean.

1. Long. 150° to 165° W.
2. Long. 140 to 150 W.
3. Long. 135 to 140 W.
4. Long. 130 to 135 W.
5. Long. 125 to 130 W.
6. Long. 115 to 125 W.

California. South of lat. 35°.

7. Fort Tejon.
8. Fort Tejon and Santa Barbara.
9. Drum Barracks and Los Angeles.
10. Rancho del Chino and Rancho del Jurupa.
11. San Diego.
12. Southwestern California.
13. Camp Cady.
14. Fort Yuma.

Arizona. South of lat. 35°.

14(a). Camp Colorado.
15. Camps McPherson & Skull Valley.
16. Camp McDowell.
17. Camp Whipple.
18. Camp Verde.
19. Camps McDowell, Verde, and Whipple combined.
20. Central Arizona.
21. Fort Buchanan.
22. Fort Grant.
23. Camp Walker (Waller or Wallen).
24. Arizona south of lat. 32°
25. Camp Goodwin.
26. Fort Grant and Camp Goodwin.
27. Camp Bowie.
28. Southeastern Arizona.

New Mexico. South of lat. 35°.

29. Fort Bayard.
30. Fort Thorn.
31. Fort Webster.
32. Southwestern New Mexico
33. Fort Craig.
34. Fort Conrad.
35. Fort McRae.
36. Fort Stanton.
37. Southern Central New Mexico.
38. Fort Fillmore.
39. Southern New Mexico.
40. Socorro.
41. Los Pinos.
42. Central New Mexico.
43. Eastern New Mexico.

Texas. North of lat. 30°.

44. Fort Bliss.
45. Camp Quitman.
46. Western Texas.
47. Fort Davis.
48. Fort Lancaster & Camp Stockton.
49. Camp Hudson.
50. Fort Chadburne.
51. Fort Terrett.
52. Fort McKavett.
53. Phantom Hill.
54. Camp Colorado.
55. Fort Mason.
56. Fort Martin Scott & Camp Verde.
56(a). Camp Cooper.
57. Fort Belknap.
58. Fort Croghan.
59. Buffalo Springs and Fort Richardson.

ZONE 12.—*Continued.*

60. Austin Barracks.
61. Austin, 1854–57.
62. Central Texas, lat. 30° to 31°; long. 97° to 98°.
63. Fort Gates.
64. Fort Graham.
65. Forts Gates and Graham combined.
66. Fort Worth.
67. Northern Texas, east of long. 98°.
68. Lat. 32° to 33°, long. 94° to 97°.
69. Lat. 31° to 32°, long. 94° to 97°.
70. Burkeville.
71. Smithsonian Stations, 1854–57.
72. Aggregate.

Indian Territory. South of lat. 35°.

73. Fort Arbuckle.
74. Fort Washita.
75. Armstrong Academy.
76. Fort Towson.
77. Southeastern Indian Territory.

Arkansas. South of lat. 35°.

78. Little Rock.
79. Little Rock Arsenal.
80. Helena.
81. Lat. 34° to 35°.
82. Lat. 33° to 34°.

Louisiana. North of lat. 30°.

83. Fort Jesup.
84. Western Louisiana.
85. Northwestern Louisiana.
86. Black River & Trinity, 1854–57.
87. Northeastern Louisiana.
88. Baton Rouge.
89. Eastern Louisiana.
90. Petite Coquille.
91. Fort Wood.
92. Last two combined.

Mississippi. North of lat. 31°.

93. Oxford, 1854–57.
94. Aggregate.
95. Smithsonian Stations, 1854–57.
96. Aggregate.
97. Vicksburg.
98. Smithsonian Stations, 1854–57.
99. Aggregate.
100. Natchez.
101. Smithsonian Stations, 1854–57.
102. Aggregate.

Alabama and Mississippi. South of lat. 31°.

103. Fort Morgan.
104. Spring Hill College.
105. Mobile.
106. Aggregate.

Alabama. Lat. 34° to 35°.

107. Surface winds.
108. Motion of clouds.
109. The two combined.

Alabama. Lat. 33° to 34°.

110. Smithsonian Stations, 1854–57.
111. Aggregate.

Alabama. Lat. 32° to 33°.

112. Eutaw.
113. Tuskegee.

ZONE 12.—*Continued.*

114. Smithsonian Stations, 1854–57.
115. Aggregate.

Alabama. Lat. 31° to 32°.

116. Mount Vernon Arsenal.
117. Aggregate.

Western Florida. North of lat. 30°.

118. Fort Barrancas.
119. Pensacola.
120. Smithsonian Stations, 1854–57.
121. Aggregate.

Georgia. Lat. 33° to 35°.

122. Summerville.
122(a). Lat. 34° to 35°.
123. Athens.
124–6. Augusta.
127. Smithsonian Stations, 1854–57.
128. Lat. 33° to 34°.

Georgia. Lat. 30° to 33°.

129(a). Savannah.
130. Oglethorpe Barracks.
131. Smithsonian Stations, 1854–57.
132. Aggregate.

Northeastern Florida.

133. Smithsonian Stations, 1854–57.
134. Aggregate.

South Carolina. Lat. 34° to 35°.

135. Abbeville.
136. Camden.
137. Smithsonian Stations, 1854–57.
138. Aggregate.

South Carolina. Lat. 33° to 34°.

139. Nightingale Hall.
140. Smithsonian Stations, 1854–57.
141. Aggregate.

South Carolina. Lat. 32° to 33°.

142. Charleston.
143. Fort Moultrie.
144. Smithsonian Stations, 1854–57.
145. Aggregate.

North Carolina. South of lat. 35°.

146. Kenansville.
147. Fort Johnston.
148. Beaufort.
149. Aggregate.

Bermuda Islands.

150. Centre Signal Station.
151. H. M. Dockyard.
152. Aggregate.

Atlantic Ocean and Madeira Islands.

153–8. Long. 45° to 75° W.
159. Long. 45° to 75° W.
160. Long. 40 to 45 W.
161. Long. 35 to 40 W.
162. Long. 30 to 35 W.
163. Long. 20 to 30 W.
164. Funchal, 1826 and 8.
165. Funchal, 1826, 7 and 8.
166. At sea, long. 5° to 20° W.
167. At sea, long. 5° to 45° W.

ZONE 12—*Continued.*

Southern Algeria, Tripoli, and Northern Egypt.

168. Geryville, Algeria.
169. Desert of Sahara, lat. 30° to 33° N., long. 0° to 1° W.
170–1. Desert of Sahara, lat. 32° to 34¼ N., long. 2° to 7° W.
172. Biskra, Algeria.
173. City of Tripoli.
174. Alexandria.
175. Cairo.
176. Rosetta.

Eastern Mediterranean Sea and its Islands.

177. At sea.
178. Larnaca.

Turkey in Asia.

179. Jerusalem.
180. Beirut.
181. Bahmdun.
182. Damascus.
183. Bagdad.
184. Bassora.

Northern India.

185. Moultan.
186. Peshawur.
187. Kotgarh and vicinity.
188. Dehra Doon.

China and Southern Japan.

189. Shanghae.
190. Tinghai.
191. Decima.
192. Nangasaki.
193. Simoda.

Pacific Ocean.

194. Long. 120° to 150° E.

ZONE 13. Lat. 25° to 30° N.

Pacific Ocean.

1. Long. 155° to 165° W
2. Long. 145 to 155 W.
3. Long. 135 to 145 W.
4. Long. 125 to 135 W.
5. Long. 105 to 125 W.

Eastern Mexico. Lat. 25° to 27°.

6. Monterey, etc.
7. Matamoras.
8. The two combined.

Southwestern Texas.
Lat. 29° to 30°.

9. Fort Clark.
10. Fort Lincoln.
11. Fort Inge.
12. Forts Lincoln and Inge combined.

Southern Central Texas.
Lat. 29° to 30°.

13. San Antonio.
14. New Braunfels.
15. Aggregate.

ZONE 13.—*Continued.*

Texas. Lat. 28° to 29°.

16. Fort Duncan.
17. Fort Ewell.
18. Fort Merrill.
19. Long. 98° to 100°.
20. Southeastern Texas, east of long. 98°.

Southern Texas.
South of lat. 28°.

21. Fort McIntosh and Laredo.
22. Ringgold Barracks.
23. San Patricio and Corpus Christi.
24–5. Forts Brown, Polk, and Matamoras.

Southern Texas. Lat. 29° to 30°.

26. Galveston.
27. Aggregate.

Southeastern Louisiana.

28. New Orleans Barracks.
29. Aggregate.
30–1. New Orleans.
32. Fort Jackson.
33. Lat. 29° to 30° in Eastern Texas, Louisiana, and Florida.

Florida. Lat. 29° to 30°.

34. Cedar Keys.
35. Fort King.
36. Cedar Keys and Fort King combined.
37. Fort Shannon.
38. St. Augustine.
39–40. Fort Marion.
41. Smithsonian Stations, 1854–57.
42. Aggregate.

Florida. Lat. 25° to 29°.

43. New Smyrna.
44. Port Orange.
45. Eastern Florida, lat. 28° to 29°.
46. Tampa Bay.
47–8. Fort Brooke.
49. Fort Meade.
50. Western Florida, lat. 27° to 28°.
51. Fort Pierce.
52. Fort Meyers.
53. Fort Deynoud.
54. Southwestern Florida.
55. Fort Dallas.
56. Cape Florida.
57. Southeastern Florida.
58. Carysford Reef.
59. Northern Bahamas.

Atlantic Ocean.

60–70. Long. 15° to 80° W.
71. Teneriffe, Canary Islands.

Egypt and Mount Sinai.

72. Western Egypt.
73. River Nile, lat. 27° to 30°.
74. Upper Egypt, Cossier, and Valley of Nile, lat. 24° to 27°.
75. Mount Sinai.
76. Persian Gulf.

India.

77. Sukhur.
78. Ajmere.
79. Meerut.

ZONE 13.—*Continued.*

80. Roorkee.
81. Agra.
82. Jahnsie.
83. Chuckrata.
84. Bareilly.
85. Futtehghur.
86. Northern Central India.
87. Futtehpore, Patna, and River Ganges.
88. Morar.
89. Seetapore.
90. Fyzabad.
91. Nagode.
92. Nowgong.
93. Aggregate.
94. Benares.
95. Goruckpore.
96. Mozufferepore.
97. Northeastern India.

Loo-Choo, and Bonin Islands, and Pacific Ocean.
East of long. 180°.

98. At sea, long. 110° to 135° E.
99. At sea, long. 115 to 135 E.
100. Napha.
101–3. At sea, long. 120° to 150° E.

ZONE 14. Lat. 20° to 25° N.

Sandwich Islands and the Pacific Ocean. East of long. 180°.

1. At sea, long. 155° to 165° W.
2. Sandwich Islands.
3. At sea, long. 140° to 155° W.
4. At sea, long. 125 to 140 W.
5. At sea, long. 115 to 125 W.
6. At sea, long. 105 to 115 W.
7. Eastern Mexico.
8. Yucatan, Central America.

Florida Keys.

9. Key West.
9(*a*). Fort Taylor.
10. Key West Barracks.
11. Salt Ponds, 1855–57.
12. Tortugas Island.
13. Indian Key.
13(*a*). Fort Jefferson.
14. Aggregate.

West Indies.

15. Havana.
16. Matanzas.
17. Northern Cuba.
18. Turk's Island.

Atlantic Ocean.

19–28. Long. 15° to 80° W.

Northwestern Nubia, Red Sea, and Western Arabia.

29. Northwestern Nubia.
30. Red Sea.
31. Jidda, Arabia.
32. Arabian Sea, long. 56° to 72½° E.

India.

33. Kurrachee.
34. Nagpoor.
35. Dum-Dum.
36. Calcutta.

ZONE 14.—*Continued.*

37. Two combined.
38. Bancoora.
39. Akyab.

Bay of Bengal, China, China Sea, and Pacific Ocean.
West of long. 180°.

40. Bay of Bengal.
41. China Sea, long. 106° to 115° E.
42. Hongkong.
43. China Sea, long. 115° to 120° E
44. Pacific Ocean, long. 120° to 130° E.
45. Pacific Ocean, long. 130° to 150° E.

ZONE 15. Lat. 15° to 20° N.

Pacific Ocean. East of long. 180°.

1. Long. 150° to 165° W.
2. Long. 135 to 150 W.
3. Long. 120 to 135 W.
4. Long. 110 to 120 W.
5. Long. 90 to 110 W.

Southern Mexico.

6–7. City of Mexico.
8. Cordova.
9. Mirador.
10. Vera Cruz.
11. Mazatlan.
12. Northern Coast of Tehuantepec.
13. Truxillo.

West Indies.

14. Up Park Camp.
15. St. Domingo.
16. Porto Rico.
17. Sombrero.
18. Four preceding combined.

Atlantic Ocean.

19. Long. 60° to 80° W.
20. Long. 55 to 60 W.
21. Long. 50 to 55 W.
22. Long. 45 to 50 W.
23. Long. 45 to 80 W.
24–27. Long. 15° to 45° W.
28. Long. 15° to 45° W.

Africa and Southwestern Arabia.

29. Timbuctoo.
30. Nubia, lat. 15° to 20° N.
31. Northern Abyssinia and the Red Sea.

Arabian Sea. Long. 50° to 74° E.

33. Long. 50° to 70° E.
34. Long. 70° to 74° E.

India.

35. Bombay.
36. Duklum.

Bay of Bengal, China Sea, and Pacific Ocean.
West of long. 180°.

37. Bay of Bengal, long. 79° to 85° E.
38. Bay of Bengal, long. 85° to 90° E.

ZONE 15.—*Continued.*

39. Bay of Bengal, long. 90° to 98° E.
40. China Sea, long. 106° to 115° E.
41. China Sea, long. 115° to 120° E.
42. Pacific Ocean, long. 120° to 130° E.
43. Pacific Ocean, long. 130° to 150° E.

ZONE 16. Lat. 10° to 15° N.

Pacific Ocean. East of long. 180°.

1. Long. 145° to 165° W.
2. Long. 125 to 145 W.
3. Long. 115 to 125 W.
4. Long. 105 to 115 W.
5. Long. 85 to 105 W.
6. City of Guatemala.

New Granada and Venezuela.
Northern parts of each.

7. Cartagena, New Granada.
8. Porto Cabello, Ven.
9. Colonia Tovar, Ven.
10–11. Caraccas, Ven.
12. Northern Venezuela.

West Indies.

13. Port of Spain.
14–15. Barbadoes.

Atlantic Ocean.

16. Long. 50° to 75° W.
17. Long. 45 to 50 W.
18. Long. 45 to 75 W.
19–23. Long. 15° to 45° W.
24. Long. 15° to 45° W.
25. District of Senaar, Southern Nubia.

Abyssinia and Southern Arabia.

26. Western Abyssinia.
27. Adouah and vicinity.
28. Eastern Abyssinia, lat. 10° to 14° N.
29. Aden.

Red Sea and Arabian Sea.
Long. 40° to 75° E.

30. Red Sea and Gulf of Aden. Long. 40° to 50° E.
31. Long. 50° to 60° E.
32. Long. 60° to 75° E.

India.

33. Seringapatam.
34. Dodabetta.
35. Passumlic.
36. Madras, 1837 to 1843.
37. Madras, 1847 to 1850.

Bay of Bengal, Gulf of Siam, China Sea, and Pacific Ocean.
West of long. 180°.

38. Bay of Bengal, long. 80° to 85° E.
39. Bay of Bengal, long. 85° to 90° E.
40. Bay of Bengal, long. 90° to 98° E.
41. Port Blair.
42. Gulf of Siam, long. 100° to 105° E.
43–5. Chinese Sea, long. 106° to 120° E.
46. St. Anna
47. Pacific Ocean, long. 120° to 130° E.
48. Pacific Ocean, long. 130° to 150° E.

ZONE 17. Lat. 5° to 10° N.

Pacific Ocean. East of long. 180°.

1–10. Long. 75° to 165° W.

Costa Rica.

11. Heredia.
12. San Jose.
13. Heredia and San Jose combined.

New Granada, South America.

14. Chagres.
15. Aspinwall.
16. Manzanilla.
17. Panama.
18. Isthmus of Darien
19. Caledonia Bay.

Guiana, South America.

20. Our Village.
21. Georgetown.
22. Catharina Sophia.
24. Aggregate.

Atlantic Ocean and Africa.

25–31. Long. 10° to 55° W.
32. Long. 10° to 55° W.
33. Liberia, Africa.
33(*a*). Guinea, Africa.
34. Abyssinia, lat. 9° to 10° N.
35. Long. 40° to 60° E.
36. Long. 60 to 75 E.
37. Long. 75 to 80 E.

Island of Ceylon, Indian Ocean.

38. Colombo.
39. Point de Galle.
40. Trincomalee.
41. Nos. 38, 39, 40 combined.

Indian Ocean, China Sea, and Pacific Ocean. West of long. 180°.

42–45. Indian Ocean, long. 80° to 105° E.
46–48. China Sea, long. 105° to 125° E.
49. Pacific Ocean, long. 125° to 150° E.

ZONE 18. Lat. 0° to 5° N.

Pacific Ocean. East of long. 180°.

1–15. Long. 75° to 165° W.

South America.

16–17. Cayenne.

Atlantic Ocean and Africa.

18–23. Long. 10° to 55° W.
24. Long. 10° to 55° W.
25. Cape Palmas, Liberia, Africa.
26. Speke's Station (near the source of the Nile), Africa.

Indian Ocean.

27–32. Long. 40° to 105° E.
33. Singapore.

China Sea, Celebes Sea, and Pacific Ocean.

34. China Sea, long. 105° to 110° E.
35–7. Celebes Sea, long. 110° to 130° E.
38–41. Pacific Ocean, long. 125° to 150° E.

ZONE 19. Lat. 0° to 5° S.

Pacific Ocean.

1–19. Long. 80° to 180° W.

Atlantic Ocean.

20. Long. 35° to 40° W.
21. Long. 36° to 39° W., lat. 1° to 3° S.
22. Long. 36 to 39 W., lat. 3 to 5 S.
23. Long. 35 to 39 W., lat. 3 to 5 S.
24. Long. 35 to 36 W., lat. 3 to 5 S.
25. Long. 32 to 36 W., lat. 1 to 3 S.
26. Long. 32 to 35 W., lat. 3 to 5 S.
27. Long. 30 to 35 W., lat. 0 to 5 S.
28. Long. 29 to 32 W., lat. 1 to 3 S.
29. Long. 29 to 32 W., lat. 3 to 5 S.
30. Long. 25 to 30 W., lat. 0 to 5 S.
31. Long. 20 to 25 W., lat. 0 to 5 S.
32. Long. 15 to 20 W., lat. 0 to 5 S.
33. Long. 15 to 11 E., lat. 0 to 5 S.

Indian Ocean.

35–42. Long. 39° to 110° E.

East Indies.

43. Padang.
44. Palembang.
45. Southwestern Sumatra.
46. Banjarmassin.
47. Indian Ocean, long. 110° to 125° E.
48. Amboina, Spice Islands.

Pacific Ocean.

49. Long. 125° to 135° E.
50. Long. 145 to 160 E.
51. Long. 145 to 170 E.
52–54. Long. 160° to 180° E.
55–56. Indian Ocean, long. 80° to 100° E.

ZONE 20. Lat. 5° to 10° S.

Pacific Ocean.

1. Long. 165° to 180° W.
2–13. Long. 85° to 165° W.
14. Long. 78° to 85° W.

Atlantic Ocean.

15. Lat. 5° to 10° S., long. 35° to 36° W.
16. Lat. 5 to 7 S., long. 34 to 36 W.
17. Lat. 7 to 9 S., long. 33 to 35 W.
18. Lat. 5 to 10 S., long. 30 to 35 W.
19. Lat. 5 to 7 S., long. 31 to 34 W.
20. Lat. 7 to 9 S., long. 31 to 33 W.
21. Lat. 5 to 7 S., long. 29 to 31 W.
22. Lat. 7 to 9 S., long. 29 to 39 W.
23. Lat. 5 to 10 S., long. 25 to 30 W.
24. Lat. 5 to 10 S., long. 20 to 25 W.
25. Lat. 5 to 10 S., long. 15 to 20 W.
26. Ascension Island.
27. Lat. 5 to 10 S., long. 10 to 15 W.
28. Lat. 5 to 10 S., long. 10 W. to 15° E.

Indian Ocean.

30. Long. 39° to 45° E.
31–42. Long. 45° to 110° E.

Southern Java, East Indies.

43. Buitenzorg.
44. Banjoewangi.
45. Southern Java.

ZONE 20.—*Continued.*

Pacific Ocean.

46–55. Long. 110° to 180° E.

ZONE 20½. (Supplementary Zone.)

Atlantic Ocean. Coast of Brazil.
Lat. 9° to 11° S.

56. Long. 34° to 37° W.
57. Long. 32 to 34 W.
58. Long. 29 to 32 W.

ZONE 21. Lat. 10° to 15° S.

Pacific Ocean.

1–3. Long. 180° to 170° W.
4. Pago-pago, Navigator's Islands.
5–12. Long. 80° to 170° W.
13. Long. 76° to 80° W.
14. Callao, Peru, South America.

Atlantic Ocean.

15. Lat. 10° to 15° S., long. 35° to 39° W.
16. Lat. 13 to 15 S., long. 35 to 39 W.
17. Lat. 11 to 13 S., long. 34 to 38 W.
18. Lat. 13 to 15 S., long. 32 to 35 W.
19. Lat. 11 to 13 S., long. 32 to 34 W.
20. Lat. 11 to 13 S., long. 29 to 32 W.
21. Lat. 13 to 15 S, long. 29 to 32 W.
22. Lat. 10 to 15 S., long. 30 to 35 W.
23. Lat. 10 to 15 S., long. 25 to 30 W.
24. Lat. 10 to 15 S., long. 20 to 25 W.
25–28. Long. 5° to 25° W.
29. Long. 5° W. to 13° E.

Indian Ocean.

30–38. Long. 40° to 100° E.
39. Northern Australia.

Pacific Ocean.

40–45. Long. 105° to 180° E.

ZONE 22. Lat. 15° to 20° S.

Pacific Ocean.

1. Feejee Islands.
2–6. Long. 150° to 180° W.
7. Tahiti, Society Islands.
8–13. Long. 70° to 150° W.

Bolivia, South America.

14. Lake Titicaca.
15. Cochabamba.

Atlantic Ocean.

16. Lat. 17° to 19° S., long. 36° to 39° W.
17. Lat. 15 to 17 S., long. 35 to 39 W.
18. Lat. 15 to 20 S., long. 35 to 39 W.
19. Lat. 17 to 19 S., long. 34 to 36 W.
20. Lat. 15 to 17 S., long. 32 to 35 W.
21. Lat. 15 to 20 S., long. 30 to 35 W.
22. Lat. 17 to 19 S., long. 32 to 34 W.
23. Lat. 15 to 17 S., long. 29 to 32 W.
24. Lat. 17 to 19 S., long. 29 to 32 W.
25. Lat. 15 to 20 S., long. 25 to 30 W.
26. Lat. 15 to 20 S., long. 20 to 25 W.
27. Lat. 15 to 20 S., long. 10 to 25 W.

ZONE 22.—*Continued.*

28. Lat. 15° to 20° S., long. 10° to 20° W.
29. Lat. 15 to 20 S., long. 5 to 10 W.
30. St. Helena, Atlantic Ocean.
31. Lat. 15 to 20 S., long. 0 to 5 W.
32. Lat. 15 to 20 S., long. 0 to 12½ E.

Mozambique Channel and Madagascar.

33. At sea.
34. Tananarivou.
35. Tamatave.
36. Aggregate.

Indian Ocean.

37–46. Long. 50° to 120° E.

Northern Australia.

47. Sween Island.

Pacific Ocean.

48. Long. 150° to 175° E.
49. Long. 150 to 180 E.
50. Long. 175 to 180 E.

ZONE 22½. (Supplementary Zone.)

Atlantic Ocean. Lat. 19° to 21° S.

51–54. Long. 29° to 39° W.

ZONE 23. Lat. 20° to 25° S.

Pacific Ocean.

1–6. Long. 150° to 180° W.
7. Long. 100° to 150° W.
8. Long. 100 to 120 W.
9. Long. 95 to 120 W.
10. Long. 90 to 120 W.
11. Long. 80 to 100 W.
12. Long. 80 to 95 W.
13. Long. 70 to 120 W.
14–17. Long. 70° to 90° W.
18. Rio Janeiro, Brazil.

Atlantic Ocean.

19. Lat. 20° to 25° S., long. 40° to 45° W.
20. Lat. 23 to 25 S., long. 37 to 39 W.
21. Lat. 21 to 23 S., long. 37 to 39 W.
22. Lat. 20 to 25 S., long. 35 to 40 W.
23. Lat. 21 to 23 S., long. 34 to 37 W.
24. Lat. 23 to 25 S., long. 34 to 37 W.
25. Lat. 20 to 25 S., long. 30 to 35 W.
26. Lat. 21 to 23 S., long. 31 to 34 W.
27. Lat. 23 to 25 S., long. 31 to 34 W.
28. Lat. 21 to 23 S., long. 29 to 31 W.
29. Lat. 23 to 25 S., long. 29 to 31 W.
30. Lat. 20 to 25 S., long. 25 to 30 W.
31. Lat. 20 to 25 S., long. 20 to 25 W.
32. Lat. 20 to 25 S., long. 5 to 20 W.
33. Lat. 20 to 25 S., long. 0 to 5 W.
34. Lat. 20 to 25 S., long. 0 to 5 E.
35. Lat. 20 to 25 S., long. 5 to 15 E.

Mozambique Channel and Indian Ocean.

36. Mozambique Channel, long. 36° to 40° E.
37. Mozambique Channel, long. 40° to 45° E.
38. Indian Ocean, long. 47° to 50° E.
39. Indian Ocean, long. 50° to 55° E.

ZONE 23.—*Continued.*

Isle of Bourbon and Mauritius.

40. St. Paul.
41. St. Peter.
42. St. Dennis.
43. Port Louis.

Indian Ocean.

44–50. Long. 55° to 85° E.
51. Long. 85° to 100° E.
52–53. Long. 105° to 115° E.

New Caledonia and Pacific Ocean. West of long. 180°.

54. At sea, long. 150° to 165° E.
55. Port of France.
56–57. At sea, long. 150° to 180° E.

ZONE 24. Lat. 25° to 30° S.

Pacific Ocean.

1. Long. 175° to 180° W.
2–8. Long. 150° to 175° W.
9. Long. 120° to 150° W.
10. Long. 105 to 120 W.
11. Long. 100 to 120 W.
12. Long. 100 to 115 W.
13. Long. 90 to 115 W.
14. Long. 90 to 105 W.
14(a). Long. 70° to 120° W.
15. Long. 85° to 100° W.
16. Long. 80° to 95° W.
17–21. Long. 70° to 90° W.

Northern Chili and Southern Paraguay, South America.

23. Chanacillo, Chili.
24. Assumption, Paraguay.

Atlantic Ocean.

25–33. Long. 0° to 50° W.
34. Long. 5° W. to 5° E.
35–37. Long. 0° to 15° E.
38. Natal, Southern Africa.

Indian Ocean.

39. Long. 31° to 35° E.
40–50. Long. 35° to 85° E.
51. Long. 85° to 100° E.
52, 53. Long. 105° to 115° E.
54. Brisbane.

Pacific Ocean.

55. Long. 150° to 165° E.
56. Long. 165° to 180° E.

ZONE 25. Lat. 30° to 35° S.

Pacific Ocean.

1–8. Long. 150° to 180° W.
9. Long. 120° to 150° W.
10–13. Long. 100° to 120° W.
14–19. Long. 71° to 100° W.

Central Chili, South America.

20. Valparaiso.
21. Santiago.

Argentine Republic and Southern Uruguay.

22. Mendoza.
23. Parana.

ZONE 25.—*Continued.*

24. Buenos Ayres.
25. Montevideo and Maldonado.

Atlantic Ocean.

26. Long. 45° to 53° W.
27–35. Long. 0° to 45° W.
36–40. Long. 0° to 20° E.

Cape Colony, South Africa.

41, 42. Capetown.
43. Graff Reinet.
44. Graham's Town.

Indian Ocean.

46–66. Long. 20° to 110° E.
67. Long. 110° to 120° E.

Australia.

68. Freemantle.
69. Adelaide.
70. Bucksfelde.
71. Sidney.

Pacific Ocean.

72–77. Long. 151° E. to 180°.

ZONE 26. Lat. 35° to 40° S.

Pacific Ocean.

1–2. Long. 170° W. to 180°.
3. Long. 165° to 180° W.
4. Long. 165 to 175 W.
5–10. Long. 140° to 170° W.
11. Long 120° to 165° W.
12. Long. 120 to 150 W.
13. Long. 120 to 140 W.
14–26. Long. 73° to 120° W.

Atlantic Ocean.

27–41. Long. 0° to 60° W.
42–45. Long. 0 to 20° E.

Indian Ocean.

46–71. Long. 20° to 145° E.

Victoria, Australia, and New Zealand.

72. Sandhurst.
73. Portland.
74. Ballaarat.
75. Geelong.
76. Cape Otway.
77. S. W. Victoria.
78. Melbourne.
79. Yan Yean.
80. Heathcote.
81. Castlemaine.
82. Beechworth.
83. Camperdown.
84. Port Albert.
85. Ararat.
86 and 87. Gabo Island.
88. Russel.
89. Bay of Islands.
90. Aukland.

Pacific Ocean.

91–100. Long. 145° E. to 180°.

ZONE 27. Lat. 40° to 45° S.

Pacific Ocean.

1–5. Long. 165° to 180° W.
6–9. Long. 150 to 165 W.
10. Long. 120° to 165° W.
11. Long. 120 to 150 W.
12. Long. 100 to 120 W.
13–17. Long. 73° to 100° W.

Southern Chili.

17(a). Puerto Montt.

Atlantic Ocean.

18–28. Long. 0° to 65° W.
29. Long. 35° W. to 20° E.
30–33. Long. 0° to 20° E.

Indian Ocean.

34–42. Long. 20° to 55° E.
43. Long. 45° to 60° E.
44. Long. 55 to 60 E.
45–54. Long. 60° to 100° E.
55–65. Long. 105° to 145 E.

Van Dieman's Land (Tasmania).

66. Hobart Town.
67. Port Arthur.
68. Kent's Group.

Pacific Ocean.

69–78. Long. 140° to 180° E..

Middle New Zealand.

79. Lyttleton.
80. Nelson.
81. Wellington.
82. Aggregate.

ZONE 28. Lat. 45° to 50° S.

Pacific Ocean.

1–7. Long. 155° to 180° W.
8. Long. 150° to 165° W.
9. Long. 150 to 155 W.
10. Long. 120 to 165 W.
11. Long. 120 to 150 W.
12–17. Long. 100° to 120° W.
17(a). Long. 85 to 120 W.
18–24. Long. 75 to 110 W.

Atlantic Ocean.

25–29. Long. 35° to 68° W.
30. Long. 5° to 20° W.
31. Long. 3° W. to 15° E.
32. Long. 5° to 20° E.

Indian Ocean.

33. Long. 20° to 45° E.
34–39(a). Long. 45° to 80° E.
40. Kerguelen's Land, or Desolation Island.
41–51. Long. 70° to 145° E.

Pacific Ocean.

52–63. Long. 135° to 180° E.

Southern New Zealand.

64. Southland.
65. Dunedin.
66. South Island.

ZONE 29. Lat. 50° to 55° S.

Pacific Ocean.

1. Long. 165° to 180° W.
2, 3. Long. 150° to 165° W.
4. Long. 120° to 165° W.
5. Long. 120 to 150 W.
6–14. Long. 80° to 120° W.
15–26. Lat. 50° to 54° S., long. 75° to 89° W.

Patagonia and Falkland Islands.

26½. Punta Arenas.
27. Port Louis.

Atlantic Ocean.

27(*a*). Lat. 50° to 54° S., long. 55° to 70° W.
44–45. Lat. 50° to 55° S., long. 35° to 55° W.
46. Lat. 50° to 55° S., long. 35° W. to 6° E.
47. Lat. 50° to 55° S., long. 3° W. to 13° E.
48. Lat. 50° to 55° S., long. 6° to 30° E.
49. Lat. 50° to 55° S., long. 20° to 22° E.

Antarctic Ocean and Heard's Island.

50. At sea, long. 51° to 54° E.
51. Heard's Island.
52. At sea, long. 69° to 75° E.
53. At sea, long. 65 to 97 E.
54. At sea, long. 110 to 135 E.
55. At sea, long. 155 to 165 E.
56. At sea, long. 165 to 180 E.

ZONE 29½. **(Supplementary Zone.)** Lat. 54° to 56° S.

Off Cape Horn. Long. 55° to 89° W.

1–16. Long. 55° to 89° W.

ZONE 30. Lat. 55° to 60° S.

Antarctic Ocean.

1. Long. 175° to 180° W.
2. Long. 120 to 165 W.
3. Long. 85 to 115 W.
4–6. Lat. 56° to 58°, long. 79° to 89° W.
7–26. Lat. 55° to 60°, long. 67° to 85° W.
27. Orange Bay and vicinity, Terra del Fuego.
28. Saint Martin's Cove and vicinity, Terra del Fuego.

Antarctic Ocean.
Long. 73° W., eastwardly to 180°.

29–39. Lat. 55° to 60°, long. 50° to 73° W.
40. Long. 4° to 10° W.
41. Long. 30 W. to 6° E.
42. Long. 10 to 32° E.
43. Long. 49 to 52 E.
44. Long. 74 to 110 E.
45. Long. 120 to 152 E.
46. Long. 160 to 180 E.

ZONE 31. Lat. 60° to 65° S.

Antarctic Ocean.

1. Lat. 60° to 65°, long. 150° to 175° W.
2. Lat. 62 to 65, long. 133 to 135 W.

ZONE 31.—*Continued.*

3. Lat. 60° to 64°, long. 84° to 117° W.
4. Lat. 60 to 62, long. 63 to 83 W.
5. Lat. 60 to 65, long. 5 to 50 W.
6. Lat. 60 to 65, long. 11 to 14 W.
7. Lat. 60 to 61, long. 12 to 14 E.
8. Lat. 60 to 65, long. 28 to 47 E.
9. Lat. 60 to 61, long. 107 to 118 E.
10. Lat. 60 to 65, long. 95 to 115 E.
11 Lat. 60 to 65, long. 130 to 135 E.
12. Lat. 60 to 65, long. 160 to 176 E.

ZONE 32. Lat. 65° to 70° S.

Antarctic Ocean.

1. Lat. 65° to 70°, long. 135° to 150° W.
2. Lat. 65 to 70, long. 100 to 110 W.
3. Lat. 65 to 70, long. 8 to 20 W.
4. Lat. 67 15′, long……………….
5. Lat. 65 to 67, long. 105 to 160 E.
6. Lat. 65 to 70, long. 166 to 176 E.

ZONE 33. Lat. 70° to 75° S.

1. Antarctic Ocean, long. 106° to 108° W.
2. Antarctic Ocean, long. 15° to 18° W.
3. Antarctic Ocean, long. 166° to 176° E.

ZONE 34. Lat. 75° to 80° S.

1. Long. 166° to 168° E.

ZONES 35, 36. Lat. 80° to 90° S.
No observations.

GENERAL TABLES

CONTAINING

RESULTS OF OBSERVATIONS GROUPED IN ZONES OF LATITUDE OF 5° EACH, AND ARRANGED IN EACH ZONE BY SERIAL NUMBERS, IN THE ORDER OF THE LONGITUDES OF THE RESPECTIVE PLACES, BEGINNING AT 180° FROM GREENWICH, AND PROCEEDING EASTWARD AROUND THE GLOBE.

WINDS OF THE GLOBE.

SERIES B. GENERAL TABLES.

ZONE No. 1.

LATITUDE 85° TO 90° NORTH.

THIS zone having never been visited by man, direct observations of its winds are wanting, and their character must necessarily be very much a matter of conjecture. It can only be inferred very obscurely from that of those in the contiguous zones. If ever the north pole is reached, the wind there may perhaps more probably be found to blow from the direction of the Eastern Siberian polar seas, towards Iceland, on the west of Europe.

ZONE No. 2.

LATITUDE 80° TO 85° NORTH.

The materials for the study of the winds of this zone consist of the observations of Dr. Kane and his party, for five days in the summer of 1854, on the eastern shore of Smith's Strait, those of the German Polar Expedition north of Spitzbergen for four days in July and August and five in September, 1868; those of Parry from June 25 to August 10, 1827, on the ice north of Spitzbergen,—periods of time too short to afford any very reliable results; and those of Captain Hall's party from November 6, 1871, to August 15, 1872. In May, 1861, Dr. Hayes and party spent ten days in this zone, on the western shore of Smith's Strait, but do not appear to have taken note of the direction of the wind to any great extent. With the exception of Captain Hall's command, that spent the winter of 1871–2 in latitude 82° 16′ N. in Polaris Bay, no other civilized parties have ever travelled north of the 80th parallel. The observed directions of the wind, and the computed resultants, were as follows:—

(No. 1.) **Smith's Strait.** Longitude 65° to 75° W.

Observed directions—N. 3, N. E. 1, calm 1; total 5.
Direction of resultant N. 10° 50′ E. ? ? ?
Ratio of resultant to sum of winds .75

(No. 2.) **Arctic Ocean.** Longitude 5° to 25° E. Summer.

Observed directions—North 6, N. N. E. 2, N. E. by N. 3, N. E. 1, E. N. E. 1. East 9, E. by S. 3, E. S. E. 9, S. E. by E. 3, S. E. 14, S. E. by S. 1, S. by E. 1. South 7, S. by W. 3, S. W. 10, S. W. by W. 1, W. S. W. 5. West 3, W. by N. 2, W. N. W. 3, N. W. 3, N. W. by N. 1, calm 3; total 94.

Direction of resultant S. 30° 7′ E.

Ratio of resultant to sum of winds .30.

Number of days 51.

(No. 3.) **Arctic Ocean.** Longitude 7° to 17° E. Autumn.

Observed directions—S. S. E. 1, S. S. W. 1, W. 1, N. N. W. 1, N. by W. 1.

Direction of resultant, N. 87° 50′ W.???

Ratio of resultant to sum of winds .32.

Number of days 5.

(No. 4.) **Polaris Bay,**[1] winter quarters of the U. S. Arctic Expedition under CAPT. HALL. Observed from November 6, 1871, to August 15, 1872, by DR. BESSELS.

		N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calm.
Number of observations.	January	3	33	44	10	1	14	1	0	17
	February	5	41	41	6	3	7	0	3	10
	March	0	40	24	15	0	9	3	3	24
	April	0	12	30	21	0	7	3	7	39
	May	0	30	4	14	3	40	6	2	26
	June	2	25	4	6	11	27	9	6	26
	July	8	19	5	8	6	28	5	4	9
	August	6	3	0	17	3	12	4	6	9
	November	0	40	20	2	0	12	0	0	5
	December	1	36	39	1	4	20	0	5	13
	Spring	0	82	58	50	3	56	12	12	89
	Summer	16	47	9	31	20	67	18	16	44
	Winter	9	110	124	17	8	41	1	8	40
Number of miles.	January	41.6	599.4	195.8	39.5	6.0	106.5	22.0	0	
	February	63.5	951.0	174.0	14.5	12.0	176.5	0	13.5	
	March	0	975.0	99.8	64.8	0	103.0	10.0	8.0	
	April	0	249.5	115.0	69.5	0	90.5	5.0	25.5	
	May	0	675.0	12.0	31.5	7.5	279.5	15.0	5.5	
	June	20.0	516.9	15.0	26.3	36.7	232.6	44.0	26.4	
	July	149.1	218.0	31.7	19.0	21.0	201.0	10.5	21.2	
	August	33.0	15.5	0	63.8	6.0	38.0	10.5	14.2	
	November	0	736.0	94.0	90.0	0	196.0	0.	0	
	December	29.0	475.5	231.0	3.0	37.0	299.2	0.	18.5	
	Spring	0	1899.5	226.8	165.8	7.5	473.0	30.0	39.0	
	Summer	202.1	750.4	46.7	109.1	63.7	471.6	65.0	61.8	
	Winter	134.1	2025.9	600.8	57.0	55.0	582.2	22.0	32.0	
Mean velocity Miles per hour	Spring	...	23.17	3.90	3.30	2.50	8.45	2.50	3.25	
	Summer	12.56	15.96	5.21	3.52	3.19	7.03	3.61	3.86	
	Winter	14.90	18.42	4.24	3.35	6.88	14.20	22.0	4.0	

[1] The observations were horary, with some interruptions. They are calculated here for the hours 1½ and 7½ A. M. and P. M. only.

ZONE No. 3.

Latitude 75° to 80° North.

The observations in this zone were made by different Arctic explorers for an aggregate period of 3120 days, or more than eight and a half years.

(Nos. 1 to 5.) **Western Arctic Ocean** (north of America).

Observed at the following places, viz. :—

Northumberland Sound, by Belcher, from August 1st, 1852, to June 30th, 1853.

At sea (longitude 90° to 97° W.) by Kane, Penny, and Belcher in the years 1850 to 1853, for an aggregate period of 96 days.

Port Refuge, Disaster Bay, by Belcher, from August 18th, 1853, to August 23d, 1854.

At sea (longitude 70° to 90° W.), by Ross, for 10 days in the summer of 1818; by Snow, for 4 days in the summer of 1850; by Kane, for 33 days in the spring and summer of 1850, and summer of 1853; and by McClintock, for three days in the autumn of 1857, and for 10 days in the summer of 1858; making an aggregate of 60 days. The observations in spring were made between the meridians of 80° and 90°, and those in summer and autumn between 70° and 80°.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
1	Northumberland Sound	Spring	237	379	20	272	141	67	79	479	534	N. 1° 53′ E.	.21	N. 9° W.	.07	92
		Summer	53	345	30	139	162	141	82	259	205	N. 3 32 E.	.09	S. 13 W.	.05	59
		Autumn	264	320	98	407	113	72	148	424	338	N. 18 31 E.	.16	N. 70 E.	.03½	91
		Winter	125	364	50	374	114	172	65	510	386	N. 5 47 E.	.11	S. 12 W.	.03	90
		The year[1]	...	...	...	...	...	...	...	...	...	N. 7 39 E.	.14	....	...	332
2	At sea (lon. 90° to 97° W.)	Spring	6	4	2	5	1	4	0	6	0	N. 12 44 E.	.21	....	...	28
		Summer	15	325	255	137	465	845	395	1135	94	S. 21 54 W.	.16	....	...	52
		Autumn	4	2	0	1	2	2	2	3	0	N. 45 W.	.30	....	...	16
3	Port Refuge	Spring	104	98	168	474	328	250	124	207	454	S. 13 27 E.	.24	S. 11½ W.	.04½	92
		Summer	275	192	379	346	118	168	108	281	495	N. 69 1 E.	.15	N. 17 E.	.25½	98
		Autumn	111	213	75	424	210	429	113	194	415	S. 3 53 W.	.19	East	.08	91
		Winter	73	17	57	579	445	219	79	89	602	S. 11 55 E.	.41	S. 5 E.	.21½	90
		The year[1]	...	...	...	...	...	...	...	...	...	S. 19 18 E.	.20	....	...	371

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Amount.	
4	At sea (lon. 80° to 90° W.)	Spring	0	...	0	...	0	...	0	...	1	...	0	...	0	...	1	...	0	S. 67° 47′ W.???	.38			2
5	At sea (lon. 70° to 80° W.)	Summer	18	4	9	3	27	15	23	4	12	0	15	7	18	14	28	7	138	N. 6 50 W.	.03			55
		Autumn	0	0	0	2	0	0	2	3	2	0	5	3	1	14	0	0	4	S. 79 35 W.???	.48			3

(Nos. 6, 7, and 8.) **Northern Greenland.**

Observed at the following places, viz. :—

Port Foulke, by Isaac I. Hayes, from September 1st, 1860, to July 31st, 1861.

Rensselaer Bay, under direction of Elisha Kent Kane, from September 1st, 1853, to Jan. 24th, 1855.

Lifeboat Cove, under Capt. Hall, from Nov. 1, 1872, to May 31, 1873. Observed by Dr. Bessels.

[1] Computed from the resultants for the seasons.

At Port Foulke and Rensselaer Bay the estimated velocity of the wind was indicated by a scale of numbers extending from 1 to 10, as follows:—

No.	Character of winds.	Pressure in pounds per square foot.	Velocity in miles per hour.	No.	Character of winds.	Pressure in pounds per square foot.	Velocity in miles per hour.
0	Calm . . .	0.000	0	6	Fresh gale . .	7.9	40
1	Light air . .	0.005	1	7	Strong gale .	12.	50
2	Gentle breeze .	0.008	4	8	Storm . . .	18.	60
3	Moderate breeze	0.09	13	9	Tempest . .	31.	80
4	Fresh breeze .	2.6	23	10	Hurricane . .	49.	100
5	Strong breeze .	5.1	32				

The observations at both places were discussed at the expense of the Smithsonian Institution, by Charles A. Schott, of the U. S. Coast Survey, who arranged and classified them, and computed the second series of resultants at each.[1]

	Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 6. Port Foulke.	Number of hours	January	0	332	10	62	0	68	0	12	260	....	...	....	...	31
		February	66	340	8	10	0	68	0	0	180	....	...	....	...	28
		March	12	326	0	72	2	82	2	0	248	....	...	....	...	31
		April	0	354	0	42	0	194	0	0	130	....	...	....	...	30
		May	0	430	0	0	0	92	34	8	180	....	...	....	...	31
		June	4	220	0	2	2	310	0	0	182	....	...	....	...	30
		July	10	166	30	10	12	260	8	12	236	....	...	....	...	31
		August[2]	32	332	18	18	6	144	4	10	180	....	...	....	...	00
		September	56	498	4	26	0	30	0	10	96	....	...	....	...	30
		October	4	342	0	4	24	116	38	6	210	....	...	....	...	31
		November	6	398	0	10	0	74	0	0	232	....	...	....	...	30
		December	0	378	0	6	0	90	0	0	270	....	...	....	...	31
		Spring	12	1110	0	114	2	368	36	8	558	N. 50° 48′ E. ?	.33	S. 58° E.	.03½	92
		Summer	46	718	48	30	20	714	12	22	598	N. 62 23 E. ?	.02	S. 44½ W.	.30	61
		Autumn	66	1238	4	40	24	220	38	16	538	N. 42 35 E. ?	.48	N. 36¾ E.	.16	91
		Winter	66	1050	18	78	0	226	0	12	710	N. 47 5 E. ?	.41	N. 54½ E.	.09	90
		The year	190	4116	70	262	46	1528	86	58	2404	N. 45 8 E. ?	.32	....	...	334
													Progress in miles.			Total No. of miles travelled.
	Number of miles	January	0	7342	10	164	0	374	0	12	...	N. 46° E.	6976	....	...	7902
		February	2684	7500	8	34	0	206	0	0	...	N. 34 E.	9382	....	...	10432
		March	42	3978	0	476	2	428	2	0	...	N. 52 E.	3604	....	...	4928
		April	0	5768	0	452	0	2352	0	0	...	N. 53 E.	3446	....	...	8572
		May	0	4736	0	0	0	362	34	8	...	N. 45 E.	4348	....	...	5140
		June	4	2600	0	2	2	7304	0	0	...	S. 45 W.	4702	....	...	9912
		July	8	788	42	22	66	3410	10	12	...	S. 43 W.	2638	....	...	4358
		August[2]	1000	7846	84	322	32	1762	4	154	...	N. 35 E.	6840	....	...	11204
		September	1990	14904	128	620	0	114	0	296	...	N. 42 E.	16316	....	...	18052
		October	4	8850	0	4	1128	2952	760	6	...	N. 48 E.	4576	....	...	13704
		November	6	10458	0	10	0	1786	0	0	...	N. 45 E.	8676	....	...	12260
		December	0	10952	0	6	0	2300	0	0	...	N. 45 E.	8650	....	...	13258
		Spring	42	14482	0	928	2	3142	36	8	...	N. 49 E.	11374	S. 30° W.	.17	18640
		Summer	1014	11234	126	346	100	12476	12	166	...	S. 82 W.	642	S. 44½ W.	.55½	25474
		Autumn	2000	34212	128	634	1128	4852	760	302	...	N. 44 E.	29538	N. 45 E.	.43	44016
		Winter	2684	25794	18	204	0	2880	0	12	...	N. 41 E.	24878	N. 36 E.	.28½	31592
		The year	5740	85722	272	2112	1230	23350	808	488	...	N. 43 E.	65200	....	...	119722

[1] For reductions in full see Smithsonian Contributions, Vol. XI.

[2] "Interpolated by taking the mean between July and September."

(Nos. 6 and 7.) **Northern Greenland.**—*Continued.*

	Kind of observations.	Time of the year.	Relative prevalence of winds from the different points of the compass: North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences: Direction.	Force.	Number of days.
No. 7. Rensselaer Bay.	Number of hours	January	20	5	3	97	58	81	24	19	437	....	...	....	...	55
		February	7	1	30	124	78	65	11	16	340	....	...	....	...	28
		March	2	2	4	74	108	17	31	24	482	....	...	....	...	31
		April	40	0	3	76	146	85	5	50	315	....	...	....	...	30
		May	74	0	6	36	61	103	9	152	303	....	...	....	...	31
		June	21	7	0	0	0	36	26	175	455	....	...	....	...	30
		July	31	4	4	14	22	38	32	67	532	....	...	....	...	31
		August	27	3	11	64	68	11	18	59	483	....	...	....	...	31
		September	32	12	16	43	56	93	24	34	410	....	...	....	...	60
		October	8	3	12	111	112	95	15	28	360	....	...	....	...	62
		November	16	9	12	75	57	42	14	14	481	....	...	....	...	60
		December	9	7	12	108	55	42	24	22	465	....	...	....	...	62
		Spring	116	2	13	186	315	205	45	226	1100	S. 32° 58′ W.	.17	S. $70\frac{3}{4}$ W.	.04	92
		Summer	79	14	15	78	90	85	76	301	1470	N. 70 24 W.	.13	N. $21\frac{3}{4}$ W.	$.30\frac{1}{2}$	92
		Autumn	56	24	40	229	225	230	53	76	1251	S. 6 48 W.	.20	S. $24\frac{1}{4}$ E.	$.07\frac{1}{2}$	182
		Winter	36	13	45	329	191	188	59	57	1242	S. 6 37 E.	.22	S. $41\frac{1}{4}$ E.	.12	152
		The year	287	53	113	822	821	708	233	660	5063	S. 22 32 W.	.14	....	...	518
													Progress in miles.			No. of miles travelled.
	Number of miles	January	33	9	4	455	187	713	72	54	...	S. 15° W.	832	....	...	1527
		February	16	1	254	838	735	733	23	25	...	S. 9 E.	1823	....	...	2625
		March	2	2	46	243	464	26	61	154	...	S. 3 E.	547	....	...	998
		April	51	0	3	316	488	1250	5	71	...	S. 25 W.	1640	....	...	2184
		May	164	0	9	249	668	730	9	251	...	S. 27 W.	1136	....	...	2080
		June	236	162	0	0	0	317	111	1197	...	N. 48 W.	1433	....	...	2023
		July	53	19	11	40	402	877	93	275	...	S. 47 W.	1163	....	...	1770
		August	95	10	30	564	830	17	113	425	...	S. 1 E.	838	....	...	2084
		September	267	27	88	236	545	1291	134	342	...	S. 40 W.	1825	....	...	2930
		October	28	14	26	616	918	880	150	293	...	S. 17 W.	1927	....	...	2925
		November	38	39	41	433	385	693	22	57	...	S. 6 W.	1140	....	...	1708
		December	17	54	160	1210	497	477	169	81	...	S. 18 E.	2139	....	...	2665
		Spring	217	2	58	808	1620	2006	75	476	...	S. 21 W.	3375	S. $55\frac{1}{2}$° W.	$.31\frac{1}{2}$	5262
		Summer	384	191	41	604	1232	1211	317	1897	...	S. 72 W.	2022	N. 19 W.	.37	5877
		Autumn	333	80	155	1285	1848	2864	306	692	...	S. 22 W.	4255	S. 35 W.	.17	7563
		Winter	66	64	418	2503	1419	1923	264	160	...	S. 9 E.	4353	S. 50 E.	$.31\frac{1}{2}$	6817
		The year	1000	337	672	5200	6119	8004	962	3225	...	S. 19 W.	12699	....	...	25519
	Mean velocity, in miles, per hour		3.5	6.2	6.0	6.3	7.4	11.2	4.1	4.8						
	Average velocity of all the winds for the whole year, 4.5 miles per hour.															

(No. 8.) **Lifeboat Cove,** winter quarters of the U. S. Arctic Expedition, under Capt. Hall. Observed from November 1, 1872, to May 31, 1873, by Dr. Bessels.

		N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calm.
Number of observations	January	6	41	2	2	12	11	0	0	58
	February	1	73	2	0	4	5	0	0	27
	March	0	50	3	1	7	9	0	0	54
	April	0	51	0	0	16	11	0	0	42
	May	2	54	5	2	8	22	0	0	31
	November	15	63	3	1	5	15	1	0	17
	December	3	103	0	0	0	6	0	0	12
	Spring	2	155	8	3	31	42	0	0	47
	Winter	10	217	4	2	16	22	0	0	97
Number of miles	January	33.0	397.8	24.2	16.4	134.2	122.2	0	0	
	February	10.8	1019.0	13.2	0	52.8	63.6	0	0	
	March	0	576.2	24.4	10.8	103.2	112.8	0	0	
	April	0	693.2	0	0	242.4	125.8	0	0	
	May	15.6	676.2	19.4	1.7	62.4	233.1	0	0	
	November	264.9	869.7	23.2	5.9	63.8	297.2	9.1	0	
	December	53.2	1568.1	0	0	0	141.2	0	0	
	Spring	15.6	1935.6	43.8	12.5	408.0	471.7	0	0	
	Winter	97.0	2984.9	37.4	16.4	187.0	327.9	0	0	
M'n velocity Miles per h'r	Spring	7.80	12.49	5.48	4.17	13.17	11.24	..	..	
	Winter	9.70	13.76	9.35	8.20	11.56	14.59	..	..	

(Nos. 9 to 15.) **Baffin's Bay, Eastern Arctic Ocean, and Spitzbergen.**

Observed at the following places, viz. :—

Arctic Ocean, longitude 11° 20′ W. to 23° E., by Scoresby for 717 days in the springs and summers of 1807 to 1818; by Parry for 25 days in the spring of 1827; and by the French Commission[1] for 35 days in the summer of 1839.

Baffin's Bay, by Ross for 28 days in the summer of 1818; by Snow for 22 days, and by Penny for 38 days in the summer of 1850; by Kane for 25 days in the summers of 1850 and 1853; and by McClintock for 52 days in the autumn of 1857, and for 52 days in the summers of 1857 and 1858.

Bell Sound, Southern Spitzbergen, } by the French Commission[1] for 12 days in July and August,
Slaadberg, Southern Spitzbergen, } 1838.

Heckla Cove, Northern Spitzbergen, by Parry from June 20th to August 28th, 1827.

Magdalena Bay, Northern Spitzbergen, by the French Commission[1] for 12 days in August, 1839.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
9	Baffin's Bay, lon. 58° to 70° W.	Summer	53	16	135	33	89	32	103	25	55	13	76	5	28	18	38	51	220	N. 80° 53 E.	.19			165
		Autumn	8	25	20	55	23	63	27	56	2	23	14	33	15	130	60	37	41	N. 40 44 W.	.11			52
10	At sea, from Greenland to Spitzbergen, lon. 17⅓ W. to 23° E.	Spring[3]	1	0	8	0	7	0	4	0	2	2	9	0	5	2	5	3	2	N. 12 13 W.	.25			396
		Summer[4]	27	5	10	2	4	0	1	2	0	0	1	6	3	5	8	17	22	N. 46 23 W.	.28			381
		Autumn	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	N. 80 21 W.???	.61			4
11	Magdelena Bay	Summer	3	0	1	3	0	2	5	3	12	0	12	0	5	5	16	3	29	S. 71 30 W.??	·22			12
12	Heckla Cove	Summer	27	42	15	0	75	3	48	12	6	0	27	0	51	6	42	24	66	N. 45 40 E.?	.15			70
13	Northern Spitzbergen[2]	Summer	30	42	16	3	75	5	53	15	18	0	39	0	56	11	58	27	95	N. 8 33 E.?	.10			82
14	Bell Sound and Slaadberg	Summer	39	0	10	0	7	0	0	0	2	0	11	0	7	0	38	0	17	N. 23 35 W.??	.53			12
15	Henlopen Straits & East'n Spitzbergen	Summer	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	2	6	S. 78 7 W.??	.03			12
		Autumn	2	0	0	0	0	1	2	0	1	0	0	0	0	0	0	1	4	S. 86 11 E.??	.18			11

Remarks.—The observations made in this zone, though much more abundant than in the preceding one, are still too meagre to afford results that can be confidently relied upon. Of the thirty resultants, computed for seasons, taking into account only the relative length of time during which the several winds prevailed, thirteen are from the N. E. quarter, three from the S. E., eight from the S. W., and six from the N. W. Only four places—Northumberland Sound, Port Refuge, Port Foulke, and Rensselaer Bay, afford data for computing the resultant for each season of the year, and hence for the whole year. At two of these the annual resultant is northeasterly, at one southeasterly, and at one southwesterly. At Port

[1] The meteorological observers connected with this expedition were Professors C. B. Lilliehook, Charles Boeck, and J. Durocher, and Messrs. V. Lattin, A. Bravais, P. A. Siljestrom, J. Gennet, E. Normand, C. Martins, A. Fleurist de Langle, U. W. de Gyldenstolpe, R. Angles, J. de la Roche Poncie, G. Ferré, A. de Chastellier, A. Fabvre, E. Pottier, and N. de St. Vulfram.

[2] Nos. 11 and 12 combined.

[3] The resultant for this season is obtained by combining the observations of Parry for 25 days, as given in the text, with those of Scoresby for 371 days, which are as follows, viz. : N. by W. to N. N. E. 892, N. E. by N. to E. N. E. 445, E. by N. to E. S. E. 243, S. E. by E. to S. S. E. 277, S. by E. to S. S. W. 250, S. W. by S. to W. S. W. 185, W. by S. to W. N. W. 256, N. W. by W. to N. N. W. 661, calm or variable 501.

[4] The resultant for this season is obtained by combining the observations of the French Commission for 35 days, as given in the text, with those of Scoresby for 346 days, which are as follows, viz. : N. by W. to N. N. E. 567, N. E. by N. to E. N. E. 232, E. by N. to E. S. E. 191, S. E. by E. to S. S. E. 297, S. by E. to S. S. W. 538, S. W. by S. to W. S. W. 417, W. by S. to W. N. W. 218, N. W. by W. to N. N. W. 418, calm or variable 672.

Foulke and Rensselaer Bay resultants are also computed for the *number of miles* travelled by the wind, but they do not differ much in direction from those computed for time only; and at both these places monsoon influence can be perceived. At the former it is southwesterly in summer and northeasterly in winter. At the latter it is northwesterly in summer and southeasterly in winter.

ZONE No. 4.

LATITUDE 70° TO 75° NORTH.

The data for the study of the winds of this zone consist of observations made in the following portions of it:—

1st. Arctic seas of North America and Greenland, and islands in the same, for an aggregate period of more than twelve and a half years, beside the observations on Baring's Island by McClure, which were not regularly recorded, but appear only in the form of incidental allusions.

2d. Western Greenland, at Upernavik, for eight years.

3d. Arctic Ocean, between Greenland and the coast of Norway, for an aggregate period of 432 days.

4th. Finmark, at two stations, for periods severally of eight and fourteen years.

5th. Arctic Ocean, north of Europe, for two months.

6th. Eastern part of Nova Zembla for four and a half years.

7th. Northern Siberia and the adjacent seas for an aggregate period of over two and a half years, besides numerous notices and remarks by Wrangel in regard to the winds of this part of the Arctic Ocean.

The aggregate length of time during which observations were regularly recorded in this zone, and incorporated into this work, is therefore over 51 years.

(Nos. 1 to 14.) **Western Arctic Ocean and its Islands.**

Observed at the following places, viz.:—

At sea (longitude 155° to 175° W.), on board the New Bedford whaling barques Cleone, Roscoe, and Helen Snow, for 466 days in the summers and autumns of the years 1859 to 1861, and 1864 to 1870, both inclusive; also by Anthon Schonborn on board the ship Vincennes, under direction of Commander John Rogers, for five days in the summer of 1855, while engaged in the second Japan Expedition.

At sea (longitude 50° to 110° W.), by John Ross for 53 days in the summer and autumn of 1818; by Parry for 101 days in the summers and autumns of 1819, 1820, 1824, and 1825; by Snow for 31 days in the summer and autumn of 1850; by Penny for 101 days in the springs and summers of 1850, 1851, and (?) 1852; by Kane for 305 days in the years 1850 to 1853 inclusive; by Kellet and McClure for 64 days in the summer of 1853; and by McClintock for 159 days in the years 1857, 1858, and 1859. Total 814 days.

Assistance Harbor, Boothia Felix, by Penny from September 1st, 1850, to August 11th, 1851; all, except for the first 12 days, being made at the anchorage.

Baring's Island, by McClure in the year 1853 (?).

Dealy Island, by McDougal, on board the ship Resolute, from September 2d, 1852, to April 30th, 1854, with the exception of the month of January, 1854. From September 9th to November 12th, 1853, the ship was drifting with the ice from latitude 74° 59′ to 74° 30′, and from longitude 105° 38′ to 101° 11′ W.

Felix Harbor, Boothia Felix, under direction of John Ross from October 1st, 1829, to September 30th, 1830.

Melville Island and vicinity, by Parry from August 28th, 1819, to August 27th, 1820. For 314 days the observations were made at Winter Harbor, on the southern shore of the island; for 48 days along the southern shore, and for the remaining four days a little eastward from the island.

Port Bowen and vicinity, by Parry at Port Bowen, from September 28th, 1824, to July 19th, 1825, in Prince Regent's Inlet for 46 days, and in the neighboring seas for 24 days, to complete the year.

Port Kennedy and vicinity, by McClintock from August 19th, 1858, to August 18th, 1859, viz.: at the port from September 16th, 1858, to August 8th, 1859; in Bellot Straits, and other places within 60 miles of the port, from August 19th to September 15th, 1858, and from August 9th to 15th, 1859, and during the 16th, 17th, and 18th of August, 1859, in Prince Regent's Inlet, at distances from the port varying from 60 to 160 miles.

Sheriff's Harbor, Boothia Felix, by John Ross from October 1st, 1830, to September 30th, 1831.

Victoria Harbor, Boothia Felix, by John Ross from October 1st, 1831, to March 31st, 1832.

(No. 1.) **Arctic Ocean.** Longitude 155° to 175° W.

Summer. North 119, N. N. E. 18, N. E. 126, E. N. E. 9. East 30, E. S. E. 14, S. E. 23, S. S. E. 14. South 32, S. S. W. 7, S. W. 43, W. S. W. 22. West 26, W. N. W. 7, N. W. 45, N. N. W 22. Calm or variable 24. Direction of resultant N. 14° 1′ E. Ratio of resultant to sum of winds .30. Number of days 286.

Autumn. North 60, N. N. E. 17, N. E. 135, E. N. E. 7. East 24, E. S. E. 2, S. E. 12, S. S. E. 0. South 30, S. S. W. 4, S. W. 15, W. S. W. 6. West 21, W. N. W. 2, N. W. 7, N. N. W. 10. Calm or variable 8. Direction of resultant N. 34° 14′ E. Ratio of resultant to sum of winds .44½. Number of days 180.

(Nos. 2 and 3.) **Baring's Island.**

Captain McClure, speaking of the possibility of effecting a passage toward the northeast, on the southeast side of the island, between it and Prince Albert's Land, in latitude 72° 50′ to 73° 13′, and longitude 115½° to 118°, says, "I considered it not practicable, except under the favorable circumstance of a continuance of southwesterly winds, which would drive the ice into Barrow Strait; but I imagine there would be but little difficulty in coming in from the N. E., *from which quarter we found the winds to prevail.*" Again, speaking of the sea on the northwest side of the island, he says, "we have invariably remarked that there is a decidedly easterly current" (*i. e.* toward the east) "which impels the enormous polar floes in that course; while the lighter, influenced by the wind, is oftentimes setting in the opposite direction."

(No. 4.) **Melville Island.**

Time of the year.	North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.	S. W.
Spring	69	1	3	0	2	0	0	0	7	0	8	0	3	0	3	0	11	0	2	0	1
Summer	32	5	7	0	2	1	3	1	2	0	4	0	12	1	6	0	12	3	10	0	5
Autumn	48	0	9	0	3	0	0	0	1	0	1	0	0	0	4	0	1	0	2	0	16
Winter	37	0	3	0	0	0	0	0	16	4	7	0	7	0	2	5	5	0	1	0	1
The year	186	6	22	0	7	1	3	1	26	4	20	0	22	1	15	5	29	3	15	0	23

Time of the year.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influence. Direction.	Monsoon influence. Force.	Number of days.
Spring	0	0	0	4	0	2	0	22	0	22	7	17	N. 6° 52′ W.	.52	N. 41½ E.	.14½	92
Summer	0	3	0	22	4	13	2	8	0	9	2	15	N. 52 51 W.	.22½	S. 4¾ W.	.28	92
Autumn	3	3	0	12	2	6	2	6	2	37	20	4	N. 27 30 W.	.66	N. 40¼ W.	.23	91
Winter	0	1	1	5	2	11	1	8	2	39	15	9	N. 8 12 W.	.45	N. 69½ E.	.09½	91
The year	3	7	1	43	8	32	5	44	4	107	44	45	N. 20 42 W.	.44	. . . .	. . .	366

The direction of the resultants for the several months of the year were as follows, viz.:— January, N. 7° 8′ W.; February, N. 16° 5′ W.; March, N. 14° 22′ W.; April, N. 9° 55′ E.; May, N. 12° 49′ W.; June, N. 56° 8′ W.; July, N. 34° 16′ W.; August N. 64° 17′ W.; September, N. 29° 48′ W.; October, N. 37° 40′ W.; November, N. 17° 37′ W.; December, N. 10° 51′ E.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
5	Dealy Island	Spring	84	33	26	58	18	18	6	60	17	N. 16° 16′ E.	.24	S. 70½° E.	.15	155
		Summer	37	24	4	10	15	25	18	38	15	N. 40 1 W.	.29	S. 62 W.	.12½	93
		Autumn	83	41	33	35	14	23	41	90	12	N. 30 13 W.	.30	S. 75 W.	.08	181
		Winter	101	18	29	19	16	9	13	66	27	N. 4 59 W.	.42	N. 16 E.	.14½	149
		The year[1]	...	...	...	...	...	...	...	...	...	N. 15 13 W.	.29	....	......	578
6	Assistance Harbor	Spring	7	8	3	15	2	7	4	33	13	N. 35 15 W.	.25	N. 60 E.	.01½	92
		Summer	3	3	0	14	6	12	3	23	8	S. 79 12 W.	.22	S. 14 W.	.24½	92
		Autumn	8	16	3	20	2	12	2	20	8	N. 23 24 E.	.10	S. 61½ E.	.22	91
		Winter	14	11	0	4	0	5	2	47	7	N. 30 4 W.	.62	N. 24½ W.	.37½	90
		The year[1]	...	...	...	...	...	...	...	...	...	N. 38 34 W.	.25	....	......	345

(No. 7.) Felix Harbor, Boothia Felix.

Computed from observations made under the direction of John Ross, from October 1, 1829, to September 30, 1830, which for the entire period were as follows:—

North	1159	S. E. by E.	3	W. S. W.	147
N. by E.	57	S. E.	121	W. by S.	41
N. N. E.	852	S. E. by S.	0	West	463
N. E. by N.	186	S. S. E.	71	W. by N.	40
N. E.	477	S. by E.	41	W. N. W.	187
N. E. by E.	34	South	580	N. W. by W.	20
E. N. E.	42	S. by W.	74	N. W.	699
E. by N.	48	S. S. W.	340	N. W. by N.	64
East	192	S. W. by S.	32	N. N. W.	697
E. by S.	10	S. W.	596	N. by W.	236
E. S. E.	24	S. W. by W.	11	Calm or variable	1174

Direction of resultant, N. 26° 2′ W.

Ratio of resultant to sum of winds, 23.

(No. 8.) Sheriff's Harbor, Boothia Felix.

Computed from observations made as in the preceding number, from October 1, 1830, to September 30, 1831, which for the entire period were as follows:—

North	891½	S. E. by E.	29	W. S. W.	219
N. by E.	64	S. E.	332	W. by S.	35
N. N. E.	240	S. E. by S.	17	West	658
N. E. by N.	16	S. S. E.	155	W. by N.	67
N. E.	248	S. by E.	71	W. N. W.	298
N. E. by E.	29	South	854	N. W. by W.	39
E. N. E.	76	S. by W.	69	N. W.	892½
E. by N.	7	S. S. W.	178	N. W. by N.	156
East	307	S. W. by S.	13	N. N. W.	722
E. by S.	37	S. W.	681	N. by W.	101
E. S. E.	92	S. W. by W.	21	Calm or variable	1026

Direction of resultant, N. 61° 13′ W.

Ratio of resultant to sum of winds, 23.

[1] Computed from the resultants for the seasons.

(No. 9.) **Southeastern Boothia Felix.**

Computed from the same observations as the two preceding numbers, together with those made, under the same direction, at Victoria Harbor, from October 1, 1831, to March 31, 1832, thus embracing an aggregate period of $2\frac{1}{2}$ years, from October 1, 1829, to March 31, 1832.[1]

Time of the year.	North.	N. by E	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.
January	720	0	88	0	16	0	10	0	36	12	0	6	130	0	104	30	366	74	228	0
February	308	8	152	96	90	0	26	0	72	2	20	0	152	0	36	0	486	12	168	0
March	290	0	90	2	138	4	18	4	134	4	22	0	98	3	78	0	340	40	94	8
April	490½	0	450	12	207	0	18	0	99	0	9	0	69	9	84	21	276	12	132	0
May	531	9	471	0	207	15	24	6	300	24	66	3	177	0	81	18	240	24	78	9
June	339	0	369	27	333	12	33	0	63	0	12	0	63	6	39	12	327	48	213	12
July	837	69	525	24	366	0	57	3	222	21	39	6	192	0	93	72	192	0	66	0
August	675	27	99	3	330	66	93	0	225	0	54	0	105	0	60	9	321	45	72	0
September	552	120	159	12	120	18	24	66	75	30	42	0	78	0	48	15	408	87	99	30
October	430	4	136	32	62	0	8	56	162	12	40	0	138	20	62	74	316	24	128	48
November	668	40	276	222	130	48	18	0	90	4	32	58	222	14	154	60	354	4	98	0
December	398	48	108	0	52	0	0	0	208	14	36	0	234	12	92	27	460	8	134	0
Spring	1311½	9	1011	14	552	19	60	10	533	28	97	3	344	12	243	39	856	76	304	...
Summer	1851	96	993	51	1029	78	183	3	510	21	105	6	360	6	192	93	840	93	351	...
Autumn	1650	164	571	47	312	66	50	122	327	46	114	58	438	34	264	149	1078	115	325	...
Winter	1426	56	348	318	158	0	36	0	316	28	56	6	516	12	232	57	1312	94	530	...
The year	6238½	325	2923	430	2051	163	329	135	1686	123	372	73	1618	64	931	338	4086	378	1510	107

Time of the year.	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influence.		Number of days.
																Direction.	Force.	
January	412	0	6	4	140	8	26	2	342	32	766	214	692	N. 47° 28′ W.	.28	......	...	93
February	324	0	54	8	124	6	14	0	244	0	910	24	734	N. 45 21 W.	.21	......	...	85
March	308	0	76	20	228	0	86	4	314	8	848	16	1190	N. 50 16 W.	.23	......	...	93
April	363	0	132	33	243	30	135	3	436½	84	561	78	333	N. 36 41 W.	.35	......	...	60
May	228	18	111	0	348	18	210	15	297	36	429	93	387	N. 28 48 W.	.30	......	...	62
June	576	21	120	0	489	12	165	0	360	24	204	9	432	N. 71 56 W.	.26	......	...	60
July	123	0	42	0	204	0	75	36	228	12	192	66	525	N. 11 33 E.	.35	......	...	62
August	126	18	81	27	294	78	120	33	462	96	546	93	306	N. 21 11 W.	.35	......	...	62
September	114	21	159	51	213	51	123	30	204	171	651	300	249	N. 32 18 W.	.35	......	...	60
October	274	2	128	46	300	74	176	34	638	66	356	268	350	N. 54 01 W.	.32	......	...	93
November	156	10	24	0	204	0	88	0	286	32	180	70	798	N. 1 43 E.	.19½	......	...	90
December	196	0	52	2	216	0	44	0	418	28	694	30	952	N. 44 34 W.	.17	......	...	93
Spring	899	18	319	53	819	48	431	22	1047½	128	1838	187	1910	N. 37 32 W.	.22	S. 7¾° E.	.02½	215
Summer	825	39	243	27	987	90	360	69	1050	132	942	168	1263	N. 21 24 W.	.29	N. 23½ E.	.08	184
Autumn	544	33	311	97	717	125	387	64	1128	269	1187	638	1397	N. 27 44 W.	.27	N. 16 E.	.04½	243
Winter	932	0	112	14	480	14	84	2	1004	60	2370	268	2378	N. 46 03 W.	.24	S. 49 W.	.05	271
The year	3200	90	985	191	3003	277	1262	157	4229½	589	6337	1261	6948	N. 34 55 W.	.24	......	...	913

[1] As the observations from October to March inclusive cover an aggregate period of three half years, while those for the remaining months cover only two, the former are multiplied by 2 and the latter by 3, in order to equalize them, and give to those of each month their due weight in determining the resultants for the seasons and year.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 10. Port Kennedy.[1] Number of hours.	January	44	74	0	0	0	0	22	512	92	....	...	......	...	31
	February	0	90	0	4	2	4	138	348	86	....	...	......	...	28
	March	0	280	0	0	0	0	38	200	226	....	...	......	...	31
	April	48	344	16	16	0	28	76	76	116	....	...	......	...	30
	May	36	140	0	0	0	0	220	220	128	....	...	......	...	31
	June	32	212	12	4	0	4	52	304	100	....	...	......	...	30
	July	8	176	42	16	2	76	26	314	84	....	...	......	...	31
	August	36	108	104	48	32	28	196	128	64	....	...	......	...	31
	Sept'mb'r	40	100	8	80	40	124	180	136	12	....	...	......	...	30
	October	12	268	8	52	16	28	28	304	28	....	...	......	...	31
	Novemb'r	4	216	2	2	0	0	12	406	78	....	...	.....	...	30
	December	2	144	0	2	0	34	60	388	114	....	...	......	...	31
	Spring	84	764	16	16	0	28	334	496	470	N. 10° 26′ W.?	.35	S. 60½° E.	.15½	92
	Summer	76	496	158	68	34	108	274	746	248	N. 21 58 W.?	.39	S. 39 E.	.07½	92
	Autumn	56	584	18	6	56	152	220	846	118	N. 26 24 W.?	.41	S. 11 E.	.05	91
	Winter	46	308	0	134	2	38	220	1248	292	N. 39 11 W.?	.67	N. 60 W.	.25	90
	The year	262	2152	192	224	92	326	1048	3336	1128	N. 24 45 W.?	.46	......	...	365
												Progress in miles.			Total No. of miles travelled.
Number of miles.	January	738	920	0	0	0	0	400	8812	...	N. 38° W.	9596	......	...	10870
	February	0	888	0	4	2	98	2338	6672	...	N. 51 W.	8298	......	...	10002
	March	0	2468	0	0	0	8	576	4304	...	N. 21 W.	5090	......	...	7356
	April	412	5364	136	104	0	848	1232	1252	...	N. 16 E.	4556	......	...	9348
	May	132	1128	0	0	0	0	4980	3436	...	N. 63 W.	7388	......	...	9676
	June	232	2188	36	4	0	4	1104	7552	...	N. 34 W.	8540	......	...	11120
	July	96	2876	318	28	2	1126	466	6054	...	N. 29 W.	6368	......	...	10966
	August	406	998	1358	86	138	146	1832	1520	...	N. 25 W.	4166	......	...	6484
	Sept'mb'r	668	1664	108	1476	536	2252	4284	3184	...	N. 81 W.	5856	......	...	14172
	October	152	6048	100	360	340	348	236	8528	...	N. 11 W.	9700	......	...	16112
	Novemb'r	42	4386	8	34	0	0	212	9220	...	N. 20 W.	10186	......	...	13902
	December	25	1560	0	20	0	398	1546	7442	...	N. 44 W.	8454	......	...	10986
	Spring	544	8960	136	104	0	856	6788	8992	...	N. 30 W.	14507	S. 45½° E.	.17½	26380
	Summer	734	6062	1712	118	140	1276	3402	15126	...	N. 31 W.	17118	S. 53 E.	.09	28570
	Autumn	862	12098	216	1870	876	2600	4732	20932	...	N. 29 W.	23086	N. 2 E.	.10½	44186
	Winter	758	3368	0	24	2	496	4284	22926	...	N. 44 W.	26281	N. 71 W.	.22	31858
	The year	2898	30488	2064	2116	1018	5228	19206	67976	...	N. 35 W.	80953	......	...	130994

[1] Computed from a portion of a series of observations made during an expedition in search of Sir John Franklin under the direction of Sir Francis Leopold McClintock, and presented by him to the Smithsonian Institution. The whole series was discussed at its expense by Mr. Charles A. Schott, of the U. S. Coast Survey; and, with the exception of the fractional portions of the month of August, the foregoing classification of the winds, and the computation of the direction of the second series of resultants, is taken from his work. For a portion of the year, observations were recorded twelve times a day, and for the remainder only six. In order, therefore, to give to the latter their due weight in determining the resultants for the different seasons and for the year, the number of observations and the corresponding number of miles is doubled.

The estimated force of the wind was indicated by Beufort's scale of numbers from 1 to 12, and from Smeaton's table, and also from Bernoulli's formula. Mr. Schott makes the corresponding velocity to be as follows:—

Force according to Beufort's notation.	Corresponding velocity in miles per hour.	Force according to Beufort's notation.	Corresponding velocity in miles per hour.
1	1	7	40
2	4	8	48
3	10	9	56
4	17	10	67
5	24	11	82
6	32	12	100

The mean velocity of any wind for any month of the year may be found by dividing the number of miles travelled by that wind in that month, as given in the second of the following tables, by the number of miles as given in the first. For full discussion see Smithsonian Contributions, Vol. XV.

No.	Place of observation	Time of the year.	RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
11	Port Bowen	January	6	5	36	3	0	0	0	6	6	N. 72° 41′ E.	.63	……	…	62
		February	6	4	37	0	0	0	2	5	2	N. 70 11 E.	.65	……	…	56
		March	0	1	36	0	0	4	4	15	2	N. 66 13 E.	.34	……	…	62
		April	5	0	36	4	0	0	8	5	2	N. 78 11 E.	.46½	……	…	60
		May	6	6	19	2	6	2	4	15	2	N. 35 43 E.	.24	……	…	62
		June	3	2	25	5	4	9	5	7	0	S. 71 35 E.	.24	……	…	60
		July	8	2	0	10	4	6	24	8	0	S. 89 28 W.	.41	……	…	62
		August	18	17	2	0	3	5	3	14	0	N. 4 08 W.	.54	……	…	62
		Septemb'r	4	4	9	9	0	6	21	5	2	S. 88 42 W.	.18	……	…	60
		October	8	5	21	13	2	0	1	10	2	N. 73 53 E.	.43	……	…	62
		Novemb'r	4	0	17	16	0	5	3	11	4	S. 77 38 E.	.24	……	…	60
		December	8	2	30	9	0	2	3	4	4	N. 81 42 E.	.50	……	…	62
		Spring	11	7	91	6	6	6	16	35	6	N. 64 36 E.	.33	N. 70° E.	.05½	184
		Summer	29	21	27	15	11	20	32	29	0	N. 26 22 W.	.17	N. 85 W.	.32½	184
		Autumn	16	9	47	38	2	11	25	26	8	N. 81 59 E.	.16	S. 40 W.	.13	182
		Winter	20	11	103	12	0	2	5	15	12	N. 74 26 E.	.59	N. 84 E.	.32½	180
		The year	76	48	268	71	19	39	78	105	26	N. 63 06 E.	.27½	……	…	730

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.						
No. 12. Arctic Ocean, longitude 80° to 110° W.																						
Spring	2	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	1	N. 49° 1′ W.	.59	N. 42 W.	.22½	7
Summer	36	14	14	15	45	8	14	1	19	13	53	21	16	3	97	10	68	N. 49 3 W.	.18	S. 57 E.	.19	75
Autumn	423	0	122	0	120	0	158	0	126	0	115	0	177	0	319	0	76	N. 22 43 W.	.28	N. 79 E.	.19½	138
Winter	4	0	5	0	4	0	1	0	2	0	11	0	18	0	11	0	4	N. 67 25 W.	.42	S. 57 W.	.11	31
The year[1]	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	..	N. 53 32 W.	.37	……	…	251
No. 13. Baffin's Bay, longitude 60° to 80° W.																						
Spring	16	0	2	0	3	0	13	0	15	0	6	0	8	0	25	0	2	N. 67 48 W.	.20	S. 57½ W.	.04	45
Summer	86	4	29	5	52	18	76	11	38	5	30	21	44	5	72	15	49	N. 8 33 E.	.06½	S. 78½ E.	.16½	94
Autumn	3	26	44	38	15	36	93	29	54	30	47	24	44	128	68	24	33	S. 65 39 W.	.13	S. 13 E.	.15½	75
Winter	66	95	52	42	46	53	43	93	16	58	30	48	200	256	268	281	81	N. 47 13 W.	.43	N. 40 W.	.25½	144
The year[1]	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	N. 57 48 W.	.18	……	…	358
No. 14. Baffin's Bay, longitude 50° to 60° W.																						
Spring	0	0	9	9	5	4	12	11	4	1	5	11	1	8	5	4	33	………	…	……	…	45
Summer	114	23	217	22	65	0	62	18	89	18	145	0	54	12	72	39	216	N. 26 13 E.	.11	……	…	197

[1] Computed from the resultants for the seasons.

(No. 15.) **Western Greenland.**

Observed at Upernavik for eight years—1847 to 1854.[1]

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
15	Upernavik	January	9	4	10	1	1	4	1	0	1	....	...	......	...	248
		February	4	2	12	1	0	7	1	0	1	....	...	......	...	226
		March	11	3	7	2	1	6	0	0	1	....	...	......	...	248
		April	10	4	5	2	1	6	1	0	1	....	...	......	...	240
		May	9	5	6	2	0	6	1	1	1	....	...	......	...	248
		June	10	2	2	2	1	9	1	1	2	....	...	......	...	240
		July	8	2	3	2	1	11	2	1	1	....	...	......	...	248
		August	7	2	5	1	2	12	1	1	0	....	...	......	...	248
		September	7	4	8	2	1	6	0	1	1	....	...	......	...	240
		October	6	3	10	2	1	8	1	0	0	....	...	......	...	248
		November	5	4	13	1	1	6	1	1	0	....	...	......	...	240
		December	5	7	13	1	0	3	1	0	1	....	...	......	...	248
		Spring	30	12	18	6	2	18	2	1	3	N. 37° 6′ E.	.28	N. 1½° W.	.11½	736
		Summer	25	6	10	5	4	32	4	3	3	N. 83 43 W.	.12	S. 71 W.	.33	736
		Autumn	18	11	31	5	3	20	2	2	1	N. 75 15 E.	.28	S. 69 E.	.12	728
		Winter	18	13	35	3	1	14	3	0	3	N. 67 1 E.	.40	N. 77½ E.	.20½	722
		The year	91	42	94	19	10	84	11	6	10	N. 56 2 E.	.21	......	...	2922

(Nos. 16 and 17.) **Arctic Ocean between Greenland and Finmark.**

Observed at the following places, viz.:—

At sea, by Parry, for 5 days, in the year 1827; by the French Commission, for 59 days, in the years 1838, 1839, and 1840; and by the German Polar Expedition, for 50 days, in the year 1868.

Bear Island (near Spitzbergen), by Sievert Tobiesen, from August 6, 1865, to June 19, 1866.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	Bet. N. & N. E.	N. E.	Bet. N. E. & E.	East.	Bet. E. & S. E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S. W.	S. W.	Bet. S. W. & W.	West.	Bet. W. & N. W.	N. W.	Bet. N. & N. W.	Calm or var.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
16	At sea	Spring	2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	N. 27° 57′ E.??	.93	......	...	8
		Summer	13	12	17	24	20	19	7	5	11	12	5	5	7	4	17	12	12	N. 58 46 E.?	.50	......	...	80
		Autumn	1	3	0	0	7	0	3	0	4	0	3	0	2	0	0	0	0	S. 54 0 E.??	.45½	......	...	27
17	Bear Island (near Spitzbergen)	Jan.	2	3	0	23	20	22	7	6	4	4	1	0	0	0	0	0	1	....	...	......	...	31
		Feb.	0	1	4	18	20	12	10	1	13	2	0	1	0	2	0	0	0	....	...	......	...	28
		March	9	4	14	22	20	2	2	0	5	2	3	2	1	0	2	2	3	....	...	......	...	31
		April	5	4	7	13	11	1	2	0	9	1	2	6	4	5	10	4	5	....	...	......	...	30
		May	10	3	12	15	17	6	4	2	1	3	1	1	2	4	2	5	5	....	...	......	...	31
		June	0	0	2	6	3	8	5	3	2	6	1	3	3	2	3	3	7	....	...	......	...	19
		Aug.	15	7	7	0	1	0	2	0	5	1	2	2	10	3	6	4	12	....	...	......	...	25
		Sept.	14	2	4	0	2	3	4	2	12	5	8	1	2	6	10	10	4	....	...	......	...	30
		Oct.	4	9	0	28	7	18	1	6	0	1	2	2	4	0	2	8	1	....	...	......	...	31
		Nov.	11	2	11	5	4	1	7	0	4	7	9	6	6	4	4	9	0	....	...	......	...	30
		Dec.	4	4	7	2	5	4	5	3	7	4	11	7	9	2	14	4	1	....	...	......	...	31
		Spring	24	11	33	50	48	9	8	2	15	6	6	9	7	9	14	11	13	N. 56 26 E.?	.40	N. 47½° E.	.20	92
		Summer	15	7	9	6	4	8	7	3	7	7	3	5	13	5	9	7	19	N. 13 36 W.??	.13	N. 79½ W.	.22	44
		Autumn	29	13	15	33	13	22	12	8	16	13	19	9	12	10	16	27	5	N. 31 16 E.?	.15	N. 68 W.	.11	91
		Winter	6	8	11	43	45	38	22	10	24	10	21	8	9	4	14	4	2	S. 69 18 E.?	.38	S. 38 E	.28	90
		The y'r[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 65 20 E.	.20	......	...	317

[1] Copied from Dr. Buchan's work on Winds.

[2] Computed from resultants for the seasons.

(Nos. 18 and 19.) **Finmark.**

Observed at the following places, viz. :—

Hammerfest during the years 1848 to 1861 inclusive.

Vardo from the year 1856 to 1863.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.
18	Hammerfest	January	2	1	2	11	8	2	2	2	1	....	...	......	...
		February	2	1	3	7	9	2	1	2	1	....	...	......	...
		March	3	1	3	8	8	2	2	2	2	....	...	......	...
		April	3	1	3	6	6	1	4	3	3	....	...	......	...
		May	3	2	5	3	5	2	3	4	4	....	...	......	...
		June	3	2	4	3	4	1	3	4	6	....	...	......	...
		July	2	2	4	2	4	2	3	4	8	....	...	......	...
		August	2	1	4	3	4	1	3	4	9	....	...	......	...
		September	2	1	2	3	8	2	4	4	4	....	...	......	...
		October	3	2	3	7	7	2	3	3	1	....	...	......	...
		November	3	1	3	9	6	2	2	2	2	....	..	......	...
		December	2	1	3	9	7	3	3	2	1	....	...	......	...
		Spring	9	4	11	17	19	5	9	9	9	S. 23° 1′ E.	.19	N. 3½° E.	.03
		Summer	7	5	12	8	12	4	9	12	23	S. 31 5 E.	.02	N.18 W.	.20
		Autumn	8	4	8	19	21	6	9	9	7	S. 12 14 E.	.24	S. 36½ W.	.04
		Winter	6	3	8	27	24	7	6	6	3	S. 21 27 E.	.42½	S. 23½ E.	.21
		The year	30	16	39	71	76	22	33	36	42	S. 19 28 E.	.22	......	...
19	Vardo	January	2	3	2	3	2	11	2	3	1	....	...	......	...
		February	1	2	0	3	1	13	3	4	1	....	...	......	...
		March	3	3	1	3	1	11	3	5	1	....	...	......	...
		April	4	4	1	3	2	6	3	4	3	....	...	......	...
		May	3	4	3	3	1	4	3	8	2	....	...	......	...
		June	3	2	2	6	3	1	1	8	4	....	...	......	...
		July	4	6	3	7	2	1	0	5	3	....	...	......	...
		August	3	4	1	8	2	2	1	7	3	....	...	......	...
		September	1	2	1	6	4	6	2	7	1	....	...	......	...
		October	2	3	1	5	2	10	2	5	1	....	...	......	...
		November	1	5	2	1	1	13	2	4	1	....	...	......	...
		December	1	3	2	3	1	15	2	3	1	....	...	......	...
		Spring	10	11	5	9	4	21	9	17	6	N. 74 40 W.	.19	N.22½ W.	.12
		Summer	10	12	6	21	7	4	2	20	10	N. 52 32 E.	.14	N.60 E.	.28½
		Autumn	4	10	4	12	7	29	6	16	3	S. 53 20 W.	.25	S. 36½ W.	.11
		Winter	4	8	4	9	4	39	7	10	3	S. 50 25 W.	.38	S. 41 W.	.24
		The year	28	41	19	51	22	93	24	63	22	S. 66 6 W.	.15	......	...

(Nos. 20 to 27.) **Arctic Siberia and the adjacent seas.**

Observed at the following places, viz. :—

Arctic Ocean, longitude 20° to 40° E., by members of the French Commission, for 62 days in the summers of 1838 to 1840.

Arctic Ocean, longitude 75° to 90° E., and 130° to 170° E., by Von Wrangel in the summers of 1734 and 1737. (?)

Bear Islands (north coast of Siberia), by Von Wrangel, from March 1st, to April 27th inclusive.

Great Northern Tundra (Taimurland), by Waldemar von Middendorf, from May 26th to August 31st, 1843. The figures denote the number of hours estimated as nearly as practicable from the published report.

Korennoje Filipovskoje, under the direction of Waldemar von Middendorf, from April 25th to October 26th, 1843.

Ust Yansk, under the direction of Lieut. Anjou, by Surgeon Figurin, for 21 months, in the years 1820, 1821, and 1822, and classified by Wesselowski in his elaborate work on the Climate of Russia.

Nova Zembla, at three places: the Straits of Kara, on the S. E. Matotschkia Schar, and Shallow Bay, on the western coast; aggregate 4½ years—1832 to 1835.

Time of the year.	RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS.																Direction of Resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable			Direction.	Force.	
No. 20. Arctic Ocean, longitude, 20° to 40° E.																						
Summer	30	4	54	40	54	12	25	10	44	26	52	30	54	34	49	16	86	N. 74° 17′ W.	.04	....	...	62
No. 21. Nova Zembla.																						
January	7	...	5	...	1	...	3	...	5	...	2	...	3	...	2	...	3	....	...	......	...	
Febru'ry	3	...	2	...	6	...	2	...	4	...	2	...	5	...	1	...	3	....	...	......	...	
March	8	...	3	...	4	...	1	...	3	...	2	...	3	...	2	...	5	....	...	......	...	
April	9	...	8	...	2	...	1	...	2	...	2	...	2	...	1	...	3	....	...	......	...	
May	8	...	3	...	2	...	3	...	1	...	4	...	4	...	2	...	4	....	...	......	...	
June	6	...	3	...	3	...	3	...	3	...	4	...	4	...	2	...	2	....	...	......	...	
July	4	..	4	...	2	...	1	...	3	...	7	...	5	...	3	...	2	....	...	......	...	
August	6	...	3	...	1	...	2	...	3	...	3	...	6	...	3	...	4	....	...	......	...	
Sept.	4	...	1	...	5	...	1	...	2	...	2	...	7	...	4	...	4	....	...	......	...	
Oct.	4	...	2	...	3	...	5	...	6	...	4	...	4	...	2	...	1	....	...	......	...	
Nov.	6	...	3	...	7	...	1	...	3	...	1	...	6	...	2	...	1	....	...	......	...	
Dec.	4	...	2	...	7	...	3	...	6	...	4	...	1	...	1	...	3	....	...	......	...	
Spring	25	...	14	...	8	...	5	...	6	...	8	...	9	...	5	...	12	N. 7°56′ E.	.26	N.15½° E.	.18½	
Summer	16	...	10	...	6	...	6	...	9	...	14	...	15	...	8	...	8	N. 67 9 W.	.16	S.82½ W.	.13½	
Autumn	14	...	6	...	15	...	7	...	11	...	7	...	17	...	8	...	6	N. 48 45 W.	.05	S.27½ W.	.05	
Winter	14	...	9	...	14	...	8	...	15	...	8	...	9	...	4	...	9	S. 69 56 E.	.10	S. 43½ E.	.15½	
The year	69	...	39	...	43	...	26	...	41	...	37	...	50	...	25	...	35	N. 9 39 W.	.08	......	...	
No. 22. Arctic Ocean, longitude 75° to 90° E.[1]																						
No. 23. Taimurland (Great Northern Tundra).																						
Spring	0	0	0	0	0	0	0	144	0	...	0	0	0	0	0	0	0	S. 22 30 E.	1.00	......		
Summer	112	359	229	27	315	0	112	55	39	27	17	0	84	28	85	113	269	N. 40 55 E.	.42	......		
No. 24. Korennoje Filipovskoje.																						
Spring	5	4	23	1	4	1	3	1	3	6	16	2	29	1	7	3	0	N. 69 39 W	.25			
Summer	10	9	38	14	60	2	9	1	5	1	18	14	47	5	18	1	0	N. 31 45 E.	.16			
Autumn	8	2	14	3	34	0	11	6	8	8	16	7	39	3	3	5	0	S. 33 19 W.	.10			
No. 25. Ust Yansk.[2]																						
Summer	22.2	...	14.3	...	39.7	...	6.3	...	0	...	6.3	...	6.3	...	4.8	...	...	N. 56 00 E.	.48			
Winter	1.4	...	0	...	10.6	...	13.4	...	36.4	...	9.3	...	22.0	...	6.8	...	...	S. 16 00 W.	.48			
Year	549	...	591	...	2004	...	1287	...	2342	...	780	...	1898	...	549	...	...	S. 11 21 E.	.25	......	...	539
No. 26. Arctic Ocean, 130° to 170° E.[3]																						
No. 27. Bear Islands (northern coast of Siberia).																						
Spring	5	0	16	11	4	0	14	2	4	0	2	0	2	0	2	0	...	N. 73 28 E.	50	......	...	58

[1] Von Wrangel experienced contrary winds when sailing northeasterly from the mouth of the Obi up to latitude 73° 18′ in the summers of 1734 and 1737.

[2] The percentages are given for the summer and winter, and the whole number of observations for the year.

[3] Von Wrangel states that near the mouth of the Kolyma river the prevailing wind is from the northwest; also that contrary winds prevented his sailing westerly from the east mouth of the Lena for 5 days in June, 1835; but miscellaneous notices of the wind, scattered through his journal, seem to indicate that, along the seas adjacent to this part of the Siberian coast, the direction is rather northeasterly.

ZONE No. 5.

Latitude 65° to 70° North.

The data for the study of the winds of this zone consist of observations made in the following portions of it:—

1st. Arctic seas of North America and Greenland, and islands in the same, for an aggregate period of more than four and a half years.

2d. North America, at five different stations, for an aggregate period of nearly six years.

3d. Greenland, at two stations on its western coast, for periods severally of five and twelve years.

4th. Northern and Western Iceland, at two stations, for periods severally of two and five years.

5th. Atlantic Ocean, between Iceland and Norway, for thirty-three days.

6th. Finmark and Lapland, at nine stations, for an aggregate period of over seven years.

7th. Northern Sweden, at four stations, for an aggregate period of twenty-two and a half years.

8th. Northeastern Siberia, at two stations, at one of which observations were regularly recorded for a period of seventy-two days, and at the other we have the general result only for a period of three years.

In this zone, therefore, the observations regularly recorded, and incorporated into this work, represent, in the aggregate, a period of nearly sixty-four and a half years.

(Nos. 1 and 2.) **Behring Strait and vicinity, and Northern Alaska.**

Observed at the following places, viz. :—

At sea (longitude 177° E. to 163° W.), by Beechy, for 13 days, in the summer of 1827; by Rogers and Schonborn, for 23 days, in the summer of 1855; and on board the New Bedford whaling barques Cleone, Roscoe, and Helen Snow, for 457 days, in the summers and autumns of 1859 to 1861, and 1864 to 1869, both inclusive.

Port Clarence and Kotzebue Sound, by Beechy, for 136 days in the summer and autumn of 1828.

No.	Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	Bet. N. & N.E.	N. E.	Bet. N.E. & E	East.	Bet. E. & S.E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S. W.	S. W.	Bet. S.W. & W.	West.	Bet. W. & N.W.	N. W.	Bet. N.W. & W.	Calm or var.			Direction.	Force.	
1	At sea......	Summer	99	20	50	11	59	25	65	37	139	14	50	13	76	39	110	49	23	N.78° 48′ W.	.08	......	...	386
		Autumn	40	21	28	11	9	10	13	6	9	2	12	3	6	3	26	10	4	N.28 0 E.?	.35½	......	...	107
2	Port Clarence and Kotzebue Sound	Summer	30	7	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	N.30 44 E.?	.76	......	...	56
		Autumn	2	7	2	7	0	0	0	0	6	0	0	0	2½	0	4½	0	55	N.20 23 E.	.20	......	...	80

(Nos. 3 to 9.) **Northern British America.**

Observed at the following places, viz. :—

Fort Anderson, by R. McFarlane, from May, 1863, to April, 1864, inclusive.

Fort Confidence, Great Bear Lake, by Richardson, from October, 1848, to April, 1849, inclusive.

Fort Franklin, Great Bear Lake, by Franklin and Richardson, from September 11th, 1825, to May 16th, 1827, with the exception of June, 1826, and part of July and September.

Fort Hope, Repulse Bay, by Rae, from September, 1846, to August, 1847, inclusive, and during the year 1854.

Fort McPherson, by Andrew Flett, for ten months, from February to November, 1863.

Igloolik and vicinity, by Parry, from August 13th, 1822, to August 12th, 1823, viz., 317 days at Igloolik, 9 days along the northeast coast of the peninsula, 28 days in the Strait of Fury and Heckla (lat. 69° to 70°, long. 82° to 86° W.), and the remaining 11 days off the west entrance of the same.

Winter Island and vicinity, by Parry, from August 1st, 1821, to July 31st, 1822, viz., 269 days at the island, 65 days in various bays and straits within 100 miles of it, 6 days in the upper part of Hudson's Strait, and the remaining 25 days off the northeast coast of Melville Peninsula.

Place and kind of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.
3. Fort McPherson.	Surface wind.	February	20	0	45	0	5	1	5	1	7				
		March	21	0	28	0	10	0	12	21	1				
		April	12	0	1	13	12	6	26	20	0				
		May	0	51	1	1	0	14	4	16	3				
		June	46	4	10	13	7	0	11	4	5				
		July	31	0	36	7	4	1	10	0	0				
		August	13	2	24	15	0	0	6	0	0				
		September	49	0	2	0	6	0	0	3	1				
		October	36	6	1	8	6	0	3	2	0				
		November	8	0	62	5	4	0	5	3	3				
	Motion of clouds.	April	0	0	1	0	0	1	3	3					
		May	0	0	0	0	0	22	0	0					
		June	2	0	0	0	0	0	0	0					
		July	1	0	2	0	0	0	0	0					
	Two preceding combined.	Spring	33	51	31	14	22	42	45	60	4	N. 39° 14′ W.	.21	S. 78° W.	.36½
		Summer	93	6	72	35	11	1	27	4	5	N. 47 55 E.	.37	N. 86 E.	.05
		Autumn	93	6	65	13	16	0	8	8	4	N. 39 49 E.	.47½	N. 32 E.	.15
		Winter	20	0	45	0	5	1	5	1	7	N. 68 46 E.	.49	S. 77 E.	.23
		The year	239	63	213	62	54	44	85	73	20	N. 43 32 E.	.33		
4. Fort Anderson.	Surface wind.	January	27	5	18	4	11	7	15	6	0				
		February	25	7	8	2	13	9	13	10	0				
		March	35	4	11	5	16	3	15	4	0				
		April	37	8	12	4	11	3	12	3	0				
		May	24	7	15	5	20	2	14	6	0				
		June	33	5	11	3	18	3	13	4	0				
		July	35	6	6	5	15	6	16	4	0				
		August													
		September	31	5	11	5	13	3	14	8	0				
		October	37	5	10	1	17	5	12	6	0				
		November	30	8	5	2	17	8	15	5	0				
		December	23	4	9	2	28	3	19	5	0				
	Motion of clouds.	June	4	2	5	1	18	2	8	0	0				
		July	2	5	12	3	15	4	1	1	0				
		September	2	4	7	3	15	3	7	0	0				
		October	8	2	9	5	16	5	4	0	0				
		November	8	4	6	4	11	5	4	0	0				
		December	13	1	6	4	9	2	5	0	0				
	Two preceding combined.	Spring	96	19	38	14	47	8	41	13	0	N. 5 36 E.	.20	N. 19½ E.	.12
		Summer	74	18	34	12	66	15	38	9	0	N. 1 43 E.	.03	S. 17½ E.	.06
		Autumn	116	28	48	20	51	29	56	19	0	N. 7 10 W.	.17	N. 2 W.	.08
		Winter	68	17	41	12	89	21	52	21	0	S. 49 8 W.	.08	S. 18½ W.	.16
		The year	374	82	161	58	253	73	187	62	0	N. 11 32 W.	.09		

(Nos. 3 to 9.) **Northern British America.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North to N.E. by N.	Northeast to E. by N.	East to S. E. by E.	Southeast to S. by E.	South to S.W. by S.	Southwest to W. by S.	West to N.W. by W.	Northwest to N. by W.	Calm or variable.			Direction.	Force.	
5. Fort Franklin.[1]	January	4	30	52	14	0	5	22	101	22	N. 7° 11′ E.	.34	......	...	62
	February	2	18	46	10	2	1	28	88	29	N. 3 53 W.	.32	......	...	56
	March	9	18	110	15	0	5	27	49	19	N. 74 51 E.	.32	......	...	62
	April	0	20	118	38	0	3	12	32	17	S. 77 8 E.	.51	......	...	60
	May	0	8	115	16	2	6	0	33	8	S. 79 37 E.	.55½	......	...	47
	July	0	6	32	32	0	0	6	16	0	S. 62 42 E.	.46	......	...	23
	August	0	14	58	14	2	6	8	22	0	S. 83 56 E.	.41	......	...	31
	Septemb'r	6	22	36	12	0	6	12	60	18	N. 18 10 E.	.30	......	...	43
	October	21	10	18	65	7	3	21	61	20	N. 32 41 E.	.10	......	...	62
	Novemb'r	16	35	45	31	2	3	44	62	16	N. 18 17 E.	.23	......	...	60
	December	5	33	28	19	6	10	40	78	29	N. 16 42 E.	.27½	......	...	62
	Spring	9	46	343	69	2	14	39	114	44	N. 78 14 E.	.44	S. 78° E.	.26	169
	Summer	0	20	90	46	2	6	14	38	0	N. 88 36 E.	.42	S. 61 E.	.28	54
	Autumn	43	67	99	108	9	12	77	183	54	N. 7 1 W.	.19	N. 77 W.	.21	165
	Winter	11	81	126	43	8	16	90	267	80	N. 20 14 W.	.31	N. 64 W.	.32	180
	The year[2]	...	...	...	...	...	...	...	...	...	N. 51 27 E.	.23	......	...	568

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Amount.	
6. Fort Confidence	Spring	22	15	83	30	263	108	92	6	4	6	16	24	256	19	27	8	70	S. 89°21′ E.?	.18	......	...	61
	Autumn	37	20	222	64	173	120	80	2	1	0	2	0	32	6	5	6	42	N. 74 47 E.?	.66	......	...	61
	Winter	53	37	146	87	458	70	57	6	19	12	82	48	156	66	82	8	182	N. 69 58 E.?	.26	......	...	90
7. Fort Hope	Spring	358	18	42	3	46	0	60	10	48	6	32	0	78	33	159	125	73	N. 17 8 W.	.49	N.73°E.	.00½	184
	Summer	212	18	38	0	53	34	35	8	26	0	17	3	46	51	86	55	120	N. 8 3 W.	.37	S. 44 E.	.14	134
	Autumn	171	2	25	9	70	20	29	23	31	2	61	2	32	41	246	187	133	N. 20 49 W.	.42	S. 2 E.	.07½	182
	Winter	380	8	20	2	16	0	9	6	14	3	11	9	44	70	180	180	127	N. 22 17 W.	.56	N.50 W.	.08	180
	The y'r[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 17 59 W.	.49	......	...	680

Place of observation.	Time of the year.	North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. S. E.	S. E.	S. E. by S.	S. S. E.	South.	S. S. W.	S. W.	S. W. by W.	W. S. W.
No. 8. Igloolik and vicinity.	January	14	0	0	0	2	0	6	0	0	0	4	0	2	2	0	2	0	0
	February	8	2	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	March	12	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	0	0
	April	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	May	4	0	2	0	6	0	0	0	0	4	6	0	2	8	0	4	0	3
	June	14	2	0	0	2	0	0	0	2	0	2	0	0	4	0	6	0	0
	July	6	0	2	0	2	1	0	0	0	2	20	1	6	0	0	0	0	0
	August	3	0	4	0	4	0	0	0	6	2	7	0	1	0	0	2	0	0
	September	2	0	0	0	0	0	8	0	0	4	4	2	4	0	0	0	0	0
	October	4	0	0	2	10	0	4	2	4	4	5	1	2	5	0	0	1	0
	November	2	0	0	0	0	0	0	0	0	2	2	0	0	2	0	4	0	0
	December	4	0	2	0	2	0	4	0	0	0	0	0	0	0	2	0	0	2
	Spring	25	0	2	0	8	0	0	0	0	4	6	0	2	8	0	8	0	9
	Summer	23	2	6	0	8	1	0	0	8	4	29	1	7	4	0	8	0	0
	Autumn	8	0	0	2	10	0	12	2	4	10	11	3	6	7	0	4	1	0
	Winter	26	2	6	0	4	0	12	0	0	0	4	0	2	2	2	2	0	2
	The year	82	4	14	2	30	1	24	2	12	18	50	4	17	21	2	22	1	11

[1] The winds of this place were originally recorded for 32 points of the compass, but in the published abstracts the record is condensed by grouping with the winds from the eight principal points N., N. E., E., etc., those from the succeeding points in the order N., N. by E., N. N. E., etc., as in this table.

[2] Computed from the resultants for the seasons.

(Nos. 3 to 9.) **Northern British America.**—*Continued.*

Place of observation.	Time of the year.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 8. Igloolik and vicinity.	January	0	2	0	4	0	16	0	6	2	0	N. 19° 25′ W.	.50	......	...	31
	February	0	4	2	2	0	26	0	6	0	0	N. 32 03 W.	.83	......	...	28
	March	0	12	0	4	0	20	2	6	0	0	N. 46 01 W.	.78	......	...	31
	April	0	6	0	2	0	18	0	15	0	0	N. 43 05 W.	.83	......	...	30
	May	2	4	0	1	0	8	0	6	2	0	N. 83 32 W.	.11	......	...	31
	June	0	6	0	2	0	8	0	10	2	0	N. 33 28 W.	.51	......	...	30
	July	0	2	0	2	0	8	0	2	2	6	S. 77 06 E.	.21½	......	...	31
	August	0	3	0	4	6	7	2	7	0	2	N. 12 31 W.	.33	......	...	31
	September	0	6	2	6	2	18	0	2	0	0	N. 20 41 W.	.08	......	...	30
	October	0	0	0	1	0	13	0	4	0	0	N. 82 05 E.	.19	......	...	31
	November	0	12	0	6	0	18	0	10	0	2	N. 62 28 W.	.47	......	...	30
	December	0	22	0	0	0	16	0	6	2	0	N. 61 45 W.	.40	......	...	31
	Spring	2	22	0	7	0	46	2	27	2	0	N. 46 10 W.	.55	N. 70¾° W.	.15	92
	Summer	0	11	0	8	6	23	2	19	4	8	N. 14 13 W.	.21½	S. 56 E.	.21½	92
	Autumn	0	18	2	13	2	49	0	16	0	2	N. 36 35 W.	.32	S. 38½ E.	.10	91
	Winter	0	28	2	6	0	58	0	18	4	0	N. 36 38 W.	.64	N. 34¼ W.	.22	90
	The year	2	79	4	34	8	176	4	80	10	10	N. 36 18 W.	.42			365

Place of observation.	Time of the year.	North.	N. by E.	N. N. E.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.	S. W.	S. W. by W.
No. 9. Winter Island and vicinity.	January	6	0	1	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
	February	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	March	8	2	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0
	April	6	0	2	3	0	4	0	4	0	2	2	2	0	2	0	0	0	6	0
	May	4	0	4	8	0	0	0	0	0	2	2	0	0	1	0	0	0	2	0
	June	6	0	4	0	0	4	0	2	0	8	6	0	0	1	0	2	1	4	0
	July	6	0	6	4	0	0	0	2	0	4	4	0	1	10	0	0	0	0	0
	August	0	5	0	3	0	1	0	2	0	0	2	1	0	4	2	6	0	5	1
	September	0	0	0	3	2	0	2	2	2	4	4	3	0	6	4	2	1	0	0
	October	4	12	6	2	0	0	0	4	0	5	4	0	0	0	0	0	0	4	0
	November	10	4	8	2	2	0	2	2	0	0	2	0	0	2	0	0	0	4	0
	December	11	0	2	0	0	0	0	0	0	2	8	0	0	0	0	2	0	0	0
	Spring	18	2	10	11	0	4	0	4	0	6	4	2	0	3	0	0	0	13	0
	Summer	12	5	10	7	0	5	0	6	0	12	12	1	1	15	2	8	1	9	1
	Autumn	14	16	14	7	4	0	4	8	2	9	10	3	0	8	4	2	1	8	0
	Winter	23	2	3	2	0	5	0	0	0	2	8	0	0	0	0	2	0	2	0
	The year	67	25	37	27	4	14	4	18	2	29	34	6	1	26	6	12	2	32	1

Place of observation.	Time of the year.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 9. Winter Island and vicinity.	January	0	0	6	0	10	0	18	0	14	0	0	N. 25° 29′ W.	.81	......	...	31
	February	0	0	0	0	3	0	22	2	17	2	0	N. 34 59 W.	.62	......	...	28
	March	0	0	2	2	13	0	18	0	6	0	0	N. 43 0 W.	.73	......	...	31
	April	2	0	4	0	4	0	7	0	6	0	4	N. 27 9 W.	.23½	......	...	30
	May	3	0	6	2	2	0	12	0	14	0	0	N. 29 57 W.	.56	......	...	31
	June	0	1	5	1	0	0	12	1	0	0	2	N. 10 51 W.	.11	......	...	30
	July	0	0	2	1	0	4	10	0	2	4	2	N. 4 17 W.	.23	......	...	31
	August	2	4	1	2	12	2	3	0	4	0	0	S. 89 37 W.	.41	......	...	31
	September	0	1	1	2	2	4	4	2	0	7	2	S. 23 12 E.	.03½	......	...	30
	October	0	0	0	0	2	0	4	0	6	9	0	N. 10 9 E.	.54	......	...	31
	November	0	0	6	0	2	0	10	0	4	0	0	N. 13 20 W.	.50½	......	...	30
	December	0	0	0	0	4	0	25	0	8	0	0	N. 28 31 W.	.57	......	...	31
	Spring	5	0	12	4	19	0	37	0	26	0	4	N. 35 32 W.	.49	N. 67½° W.	.08½	92
	Summer	2	5	8	4	12	6	25	1	6	4	4	N. 54 14 W.	.17	S. 14½ E.	.27½	92
	Autumn	0	1	7	2	6	4	18	2	10	16	2	N. 0 44 E.	.41	N. 78½ E.	.21½	91
	Winter	0	0	6	0	17	0	65	2	39	2	0	N. 32 11 W.	.72	N. 36 W.	.30	90
	The year	7	6	33	10	54	10	145	5	81	22	10	N. 29 26 W.	.42½	......	...	365

(Nos. 10 and 11.) **Arctic Ocean and Baffin's Bay.**

Observed as follows:—

Arctic Ocean, longitude 80° to 85° W., by Parry, for 46 days in the summer and autumn of 1822 and 1823.

Baffin's Bay, longitude 52° to 65° W., by John Ross, for 28 days in the summer and autumn of 1818; by Parry, for 61 days in the summer and autumn of 1819, 1820, 1824 and 1825; by Snow, for 6 days in the summer and autumn of 1850; by Kane, 99 days in the spring, summer, and autumn of 1850 and 1851; by Penny, for 6 days in the spring and summer of 1850 and 1851; and by McClintock, for 83 days in all the different seasons in the years 1857, 1858 and 1859.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
10. Arctic Ocean.	Summer	4	2	3	0	4	2	3	8	7	1	5	1	4	6	4	5	0	S. 49° 46′ W.	.12	……	…	30
	Autumn	10	9	3	3	8	5	5	0	3	6	5	0	13	13	10	3	0	N. 29 52 W.	.20	……	…	16
11. Baffin's Bay.	Spring	98	73	41	58	35	35	21	46	34	23	39	35	16	63	60	259	42	N. 11 47 W.	.47	N. 27° W.	.43½	113
	Summer	90	25	68	27	66	22	44	13	50	6	80	18	36	7	65	33	52	N. 21 5 E.	.12	N. 52¼ W.	.07	117
	Autumn	23	13	45	8	16	6	26	12	31	0	31	15	28	6	23	8	21	N. 0 32 E.	.02	S. 63 W.	.11	52
	Winter	0	1	0	3	0	1	0	6	0	0	0	0	0	1	0	0	0	S. 52 3 E.	.58	S. 40 E.	.56	1
	The year[1]	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	N 54 46 E.	.12	……	…	283

[1] Computed from the resultants for the seasons.

(Nos. 12 and 13.) **Western Greenland.**

Observed at the following places, viz.:—

Godthaab, from the year 1841 to 1845 inclusive.

Jacobshavn, for 11 years, 1840 to 185

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
No. 12. Godthaab.	January	2	9	9	2	0	5	1	2	1					
	February	1	9	6	4	1	4	1	1	1					
	March	3	11	5	4	1	4	0	1	2					
	April	4	9	6	2	1	5	0	1	2					
	May	1	8	6	2	1	8	1	1	3					
	June	4	5	4	0	0	9	3	2	3					
	July	1	6	4	1	0	10	3	2	4					
	August	1	8	4	0	0	11	3	0	4					
	September	2	7	7	1	0	7	2	1	3					
	October	0	5	8	2	0	9	2	2	3					
	November	1	6	11	5	0	4	0	1	2					
	December	4	6	7	4	2	3	1	2	2					
	Spring	8	28	17	8	3	17	1	3	7	N. 71° 19′ E.	.31	N. 61½° E.	.10	460
	Summer	6	19	12	1	0	30	9	4	11	N. 87 19 W.	.08	S. 80 W.	.29	460
	Autumn	3	18	26	8	0	20	4	4	8	S. 86 58 E.	.26	S. 40 E.	.08½	455
	Winter	7	24	22	10	3	12	3	5	4	N. 73 55 E.	.36	N. 71 E.	.15	451
	The year	24	89	77	27	6	79	17	16	30	N. 77 0 E.	.21	……	…	1826

(Nos. 12 and 13.) **Western Greenland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
No. 13. Jacobshavn.	January	2	1	16	1	2	3	0	0	6					
	February	3	1	12	1	2	4	0	0	5					
	March	6	1	11	1	3	3	0	1	5					
	April	7	1	10	1	3	4	0	0	4					
	May	8	1	8	1	2	5	0	1	5					
	June	8	0	5	1	3	6	1	1	5					
	July	4	1	4	2	3	6	1	1	9					
	August	6	0	9	1	2	7	0	0	6					
	September	5	1	14	1	2	4	0	0	3					
	October	4	1	15	2	2	3	0	0	4					
	November	3	1	20	1	2	2	0	0	1					
	December	3	1	19	1	2	4	0	0	1					
	Spring	21	3	29	3	8	12	0	2	14	N. 75° 45′ E.	.26	S. 15° E.	.11	1012
	Summer	18	1	18	4	8	19	2	2	20	S. 48 30 E.	.07	S. $83\frac{1}{2}$ W.	$.22\frac{1}{2}$	1012
	Autumn	12	3	49	4	6	9	0	0	8	S. 88 43 E.	.52	N. 89 E.	.19	1001
	Winter	8	3	47	3	6	11	0	0	12	S. 82 25 E.	.49	S. $64\frac{1}{2}$ E.	.17	993
	The year	59	10	143	14	28	51	2	4	54	S. 87 34 E.	.33	......	...	4018

(Nos. 14 and 15.) **Northern and Western Iceland.**

Observed at the following places, viz. :—

Eyafiord, by Van Scheels, from June 1st, 1811, to May 31st, 1813. The observations were made sometimes once, sometimes twice, and sometimes thrice a day. When only one was made it is taken to represent a day in this discussion; when two, each as half a day; and when three, each as one-third of a day.

Stykkisholm, during the years 1866 to 1870 inclusive. Communicated by A. O. Thorlacius to Dr. Buchan.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
No. 14. Eyafiord.	January	10	3	0	0	36	36	34	17	5	S. 61° 43′ W.	.56	......	...	62
	February	13	6	2	3	24	25	24	37	.7	S. 89 37 W.	.42	......	...	57
	March	27	5	7	7	36	31	27	19	9	S. 68 02 W.	.30	......	...	62
	April	11	8	3	4	23	26	41	20	19	S. 77 55 W.	$.40\frac{1}{2}$	......	...	60
	May	46	16	10	11	18	4	19	22	22	N. 10 37 W.	.27	......	...	62
	June	44	29	7	0	7	31	6	24	12	N. 18 18 W.	$.36\frac{1}{2}$	......	...	60
	July	49	26	12	7	16	4	5	8	29	N. 23 55 E.	.35	......	...	62
	August	29	37	20	6	13	20	4	4	20	N. 47 53 E.	$.24\frac{1}{2}$	......	...	62
	September	20	6	14	16	28	30	20	6	22	S. 26 24 W.	.22	......	...	60
	October	22	6	34	13	24	14	8	4	13	S. 62 18 E.	.22	......	...	62
	November	19	13	9	7	37	25	16	15	18	S. 45 26 W.	.19	......	...	60
	December	19	2	1	2	36	31	30	29	12	S. 74 59 W.	.44	......	...	62
	Spring	84	29	20	22	77	61	87	61	50	N. 84 11 W.	.24	N. $76\frac{1}{2}$° W.	$.08\frac{1}{2}$	184
	Summer	122	92	39	13	36	55	15	36	61	N. 14 47 E.	.28	N. $41\frac{1}{2}$ E.	.35	184
	Autumn	61	25	57	36	89	69	44	25	53	S. 8 47 W.	·15	S. 41 E.	$.20\frac{1}{2}$	182
	Winter	42	11	3	5	96	92	88	83	24	S. 74 08 W.	.46	S $65\frac{1}{2}$ W.	.31	181
	June 1, 1811 to June 1, 1812	161	62	36	40	154	156	101	141	85	N. 86 38 W.	.22	......	...	366
	June 1, 1812 to June 1, 1813	148	95	83	36	144	121	133	64	103	N. 86 29 W.	.10	......	...	365
	June 1, 1811 to June 1, 1813	309	157	119	76	298	277	234	205	188	N. 86 35 W.	.16	......	...	731

(Nos. 14 and 15.) **Northern and Western Iceland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
No. 15. Stykkisholm.	January	1	7	8	5	4	3	1	0	2	....	...	....	...	155
	February	0	7	7	2	3	4	2	1	2	....	...	....	...	141
	March	0	7	11	2	3	3	2	1	2	....	...	....	...	155
	April	1	7	8	4	5	1	1	0	3	....	...	....	...	150
	May	1	6	11	3	2	2	1	2	3	....	...	....	...	155
	June	1	5	6	3	5	4	2	2	2	....	...	....	...	150
	July	1	3	8	3	3	3	3	3	4	....	...	....	...	155
	August	1	6	8	3	3	2	2	2	4	....	...	....	...	155
	Sept'mber	0	10	5	3	5	3	1	1	2	....	...	....	...	150
	October	1	5	6	5	5	4	1	1	3	....	...	....	...	155
	November	1	6	7	3	5	3	2	0	3	....	...	....	...	150
	December	1	7	6	5	3	4	2	1	2	....	...	....	...	155
	Spring	2	20	30	9	10	6	4	3	8	S. 86° 43′ E.	.45	N. 65 E.	.14	460
	Summer	3	14	22	9	11	9	7	7	10	S. 73 36 E.	.23	N. 84 W.	.10	460
	Autumn	2	21	18	11	15	10	4	2	8	S. 67 38 E.	.33	S. 18½ W.	.05½	455
	Winter	2	21	21	12	10	11	5	2	6	S. 75 8 E.	.35	S. 50 E.	.02	451
	The year	9	76	91	41	46	36	20	14	32	S. 76 47 E.	.33	....	...	1826

(Nos. 16 to 21.) **Lapland, Finmark, and the adjacent seas.**

Observed at the following places, viz.:—[1]

Andennes, Finmark, from 1863 to 1868 inclusive.

Atlantic Ocean (long. 15° W. to 15° E.) by the French Commission, for 28 days at different times in the summers and autumns of the years 1838, 1839 and 1840, and by the German Polar Expedition for 5 days in the year 1868.

Arctic Ocean (long. 30° to 40° E.) for 15 days in the summers of the aforesaid years.

Bossekop, Finmark, from August 30th, 1838, to May 16th, 1839.

Kautokeino, Finmark, for 2 days in April, and 4 in September, in the year 1839.

Kiexisvara, Lapland, for 24 days in May, 1839.

Kolare, Lapland, for 2 days in May, 1839.

Kilangi, Lapland, for 2 days in April, 1839.

Karesuando, Lapland, for 2 days in April, 1839.

Muonioniska, Lapland, for 1 day in April, 1839.

Tromsoe, Finmark, from July to November, inclusive, 1867. Reported to the Meteorological Institute of Norway.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	Bet. N. & N.E.	N. E.	Bet. N.E. & E.	East.	Bet. E. & S.E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S. W.	S. W.	Bet. S.W. & W.	West.	Bet. W. & N.W.	N. W.	Bet. N.W. & N	Calm or var.			Direction.	Force.	
16. At sea, long. 15° W. to 15° E.	Spring	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	S. 45° E.???	.33	......	...	3
	Summer	6	2	2	1	1	2	5	5	2	2	0	2	0	5	0	4	1	N.75 23 E.	.13	......	...	12
	Autumn	1	0	7	13	3	2	4	9	12	1	12	0	0	4	4	0	0	S. 35 7 E.	.31	......	...	18
17. Andennes.[2]																							
18. Tromsoe.	Sept.	3	3	7	0	0	0	2	1	0	0	22	2	1	0	6	4	39	......	...	......	...	30
	Oct.	3	0	7	0	2	0	0	0	3	0	33	1	2	0	4	1	37	......	...	......	...	31
	Nov.	5	0	3	0	1	0	9	0	1	0	23	3	7	2	14	0	22	......	...	......	...	30
	Autumn	11	3	17	0	3	0	11	1	4	0	78	6	10	2	24	5	98	S. 71 51 W.	.26	......	...	91

[2] Mr. Buchan, in his work on the prevailing winds over the globe, gives them for this place as follows, for the different months of the year, viz.: January, February, March, April, October, and December, south; May, June and August, northeast; July, west; September, southwest; and November, south or northwest.

[1] The observations at all the places, except Andennes and Tromsoe, were made by the French Commission.

(Nos. 16 to 21.) **Lapland, Finmark, and the adjacent seas.**—*Continued.*

Place of observation.	Time of the year.	North.	Bet. N. & N.E.	N. E.	Bet. N. E. & E.	East.	Bet. E. & S. E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S. W.	S. W.	Bet. S. W. & W.	West.	Bet. W. & N. W.	N. W.	Bet. N. W. & N.	Calm or var.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
19. Bossekop.	Spring	13	0	3	5	24	251	179	43	39	23	33	15	28	30	59	8	15	S. 42° 49′ E.	.47	S. 10° E.	.18½	77
	Summer	2	0	6	0	0	0	0	0	1	0	3	0	0	0	0	3	0	N. 34 12 E.	.25	N. 22 W.	.39½	2
	Autumn	20	7	15	23	106	139	120	78	36	32	29	18	20	13	81	76	163	S. 60 6 E.	.24	N. 62 W.	.09	91
	Winter	5	4	25	20	81	515	190	87	49	39	39	29	31	15	23	15	37	S. 53 6 E.	.61	S. 44½ E.	.28½	90
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 36 E.	.33	......	...	260
20. Muonioniska and vicinity.[2]	Spring	3	1	3	0	7	3	36	20	6	17	25	3	1	3	7	4	32	S. 7 6 E.	.40	......	...	33
	Autumn	1	2	5	0	0	0	2	0	0	0	0	0	0	0	2	0	12	N. 37 7 E.	.68	......	...	4
21. At sea, long. 30° to 40° E.	Summer	2	0	0	0	1	14	3	2	5	4	9	1	7	3	5	4	4	S. 27 54 W.	.25	......	...	15

[1] Computed from the resultants for the seasons.
[2] Including Kiexisvara, Kautokeino, Kolare, Kilangi, and Karesuando.

(Nos. 22 to 25.) **Northern Sweden.**

Observed at the following places, viz.:—

Haparanda, by G. W. Bellman, from July, 1859, to December, 1866, inclusive.

Jockmock, by G. Westerlund, from November, 1860, to December, 1866, inclusive, except May, June, July, and August, 1861.

Pitea, by L. A. Ringius, from July, 1859, to December, 1866, inclusive.

Stensele, by A. G. Bjuhr, from May, 1860, to December, 1866, inclusive.

Place of observation.	Time of the year.	North.	Bet. N. & N.E.	N. E.	Bet. N. E. & E.	East.	Bet. E. & S. E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S.W.	S. W.	Bet. S. W. & W.	West.	Bet. W. & N. W.	N. W.	Bet. N. W. & N.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
No. 22. Stensele.	Spring	162	12	151	15	182	41	63	4	88	6	125	26	132	10	222	45	346	N. 9° 31′ W.	.14	N. 37° W.	.06½	583
	Summer	236	10	112	21	282	88	86	9	106	7	138	30	90	16	235	79	285	N. 21 42 E.	.15	N. 39 E.	.06½	644
	Autumn	111	9	117	26	270	37	80	4	120	19	187	43	127	8	213	44	422	N. 10 40 W.	.03	S. 18½ W.	.06	637
	Winter	71	4	133	17	174	37	69	4	73	8	95	23	115	5	141	28	497	N. 31 12 E.	.06	S. 5½ E.	.05½	573
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 9 34 E.	.09	......	...	2437
No. 23. Jockmock.	Spring	76	8	139	22	88	6	107	22	148	49	147	10	170	4	55	4	508	S. 15 59 W.	.11	S. 78½ W.	.03	521
	Summer	115	13	171	51	169	16	120	25	170	45	73	14	85	3	27	3	272	S. 70 36 E.	.20	N. 80 E.	.19	460
	Autumn	111	7	95	16	128	13	140	19	142	18	192	19	167	6	78	2	597	S. 18 27 W.	.10	N. 81 W.	.03	576
	Winter	91	2	58	4	60	8	90	14	157	6	170	9	249	0	73	0	733	S. 44 3 W.	.19	S. 75 W.	.14	573
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 0 25 W.	.10	......	...	2130
No. 24. Pitea.	Spring	193	41	140	28	78	8	118	41	274	30	96	14	91	11	85	20	590	S. 40 3 E.	.05	......	...	644
	Summer	204	42	125	21	178	17	200	80	321	47	62	20	103	23	107	41	413	S. 47 43 E.	.13	......	...	706
	Autumn	248	39	114	13	65	14	91	38	380	59	198	25	161	13	165	27	422	S. 52 53 W.	.13	......	...	728
	Winter	153	28	106	19	18	6	40	17	229	35	150	17	124	17	124	18	824	S. 76 56 W.	.11	......	...	663
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 19 36 W.	.06	......	...	
No. 25. Haparanda.	Spring	314	15	171	19	96	3	198	14	397	11	216	12	69	1	77	14	234	S. 24 57 E.	.12	S. 25 E.	.02	
	Summer	284	16	236	21	164	2	177	15	406	31	250	13	126	7	76	15	180	S. 24 25 E.	.11½	S. 20 E.	.02	
	Autumn	319	16	243	10	126	7	204	7	344	17	292	5	123	4	124	15	205	S. 14 50 E.	.06	N. 36½ W.	.04	
	Winter	300	6	214	10	96	2	239	10	332	12	233	1	105	1	100	10	231	S. 29 31 E.	.09	N. 49 E.	.01	
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 24 10 E.	.09			

[1] Computed from the resultants for the seasons.

(Nos. 26 and 27.) **Northeastern Siberia.**

Observed at the following places, viz.:—

No. 26. *Nijnii Kolimsk*, by Baron Wrangel, in the years 1820, 1821, and 1822, who says that a northwest wind "blows almost without intermission," and in another place that the sea winds "always prevail."[1]

Anadyrsk, by a member of the Russo-American Telegraph Expedition in the years 1866 and 1867. See note to Nos. 69, 70, and 71 of Zone No. 6.

No. 27. *Bush's Station*, by George Bush, from October 21st to December 31st, in the year 1866, as follows:—

Autumn:
- North 9, N. E. 2, East 15, S. E. 7, West 29, N. W. 16; calm or variable 4.
- Direction of resultant N. 48° 29′ W.
- Ratio of resultant to sum of winds, 31.
- Number of days, 41.

December:
- North 1, N. E. 1, East 8, S. E. 2, South 1, West 16, N. W. 30.
- Direction of resultant N. 52° 52′ W.
- Ratio of resultant to sum of winds, 58.

ZONE No. 6.

Latitude 60° to 65° North.

The data for the study of the winds of this zone consist of observations made in the following portions of it, aggregating about 420 years:—

Region.	No. of stations.	Aggregate length of time.
Pacific Ocean	...	567 days.
American Continent	9	Over 11½ years.
Greenland	2	19 months.
Hudson's Strait, Baffin's Bay, and Atlantic Ocean	...	256 days.
Southwestern Iceland and Faroe and Shetland Islands	5	Nearly 35 years.
Norway and Sweden	13	71¼ years.
European Russia	22	270½ years.
Siberia	8	Over 27 years.

(Nos. 1 to 6½.) **Pacific Ocean and Alaska.**

Observed at the following places, viz.:—

At sea (longitude 172° E. to 160° W.), by Beechy, for 21 days in the summers and autumns of the years 1826 and 1827; by Rogers and Schonborn, for 43 days in the summer of 1855; and on board the New Bedford whaling barques Cleone, Roscoe, and Helen Snow for 295 days in the springs, summers, and autumns of 1859 to 1861, and 1864 to 1870, both inclusive.

Fort St. Michaels, Alaska, by H. M. Bannister, of the Russo-American Telegraph Expedition, from October 15th, 1865, to August 31st, 1866, and communicated by him to the author.

Ikogmut (on the river Kwipack), Alaska, by Jacques Netzvetof, and communicated by C. Wesselowski to Prof. Kaemtz for insertion in the Repertorium für Meteorologie. The observations appear

[1] Nijnii Kolymsk. Percentage of winds in winter: 3 years, 1820–22.

N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
6	2	5	29	13	7	25	12

Wrangel does not give the winds for each day, but says that moderate and strong winds from this direction blew on these days, etc. From these remarks the above percentage was computed by Dr. Woeikof.

(Nos. 1 to 6½.) **Pacific Ocean and Alaska.**—*Continued.*

to have been made once a day, and extend (with interruptions amounting in the aggregate to 396 days) from September 13th, 1848, to July 6th, 1854.

Nulato, Alaska, by W. H. Dall, of the Russo-American Telegraph Expedition, by means of a pennant 60 feet from the ground, from December 1st, 1866, to May 26th, 1867.

Plover Bay, Alaska, on board the New Bedford whaling barque Cleone, from September 18th, 1859, to July 13th, 1860, with frequent omissions.

Unalakleet, Alaska, by F. Westdahl, of the Russo-American Telegraph Expedition, from October 19th, 1866, to January 23d, 1867.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	Bet. N. & N. E.	N. E.	Bet. N. E. & E.	East.	Bet. E. & S. E.	S. E.	Bet. S. E. & S.	South.	Bet. S. & S. W.	S. W.	Bet. S. W. & W.	West.	Bet. W. & N. W.	N. W.	Bet. N. W. & N.	Calm or variable.			Direction.	Force.	
No. 1. At sea.																						
Spring	26	11	18	3	8	0	14	2	9	4	11	5	4	9	6	8	1	N. 8°52′E.?	.23	......	...	70
Summer	42	11	55	20	35	9	42	28	71	27	57	10	27	6	19	19	26	S. 25 38 E.	.15	......	...	232
Autumn	55	16	45	22	11	0	18	9	14	6	8	10	8	5	31	6	18	N.19 23 E.?	.33½	......	...	57
No. 2. Plover Bay.																						
Spring	30	0	4	0	6	0	22	0	4	0	0	0	0	0	22	0	4	N.17 2 E.??	.31	N.61° E.	.03½	46
Summer	10	4	4	0	6	0	2	0	32	2	0	0	0	0	0	0	0	S. 30 29 E.??	.36	S. 16 E.	.60	33
Autumn	46	12	20	0	1	0	1	0	26	0	2	0	2	0	16	0	0	N. 5 59 E.?	.43½	N.11 E.	.16½	63
Winter	54	0	2	0	0	0	8	0	4	2	2	0	0	0	52	8	0	N.21 58 W.?	.71	N.35 W.	.48	66
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 3 15 E.	.27	......	...	208
No. 3. Fort St. Michaels.[2]																						
Spring	220	19	51	0	26	0	14	0	60	0	28	0	24	0	22	0	86	N.39 26 E.	.35	N.22½E.	.17½	92
Summer	136	0	22	0	34	0	12	0	144	0	84	0	60	0	22	2	30	N.88 59 W.	.17	S. 72½W.	.34½	92
Autumn	62	41	41	8	8	0	10	11	15	0	24	0	4	0	18	62	62	N.35 44 E.	.42	N.21 E.	.25	61
Winter	98	0	68	0	14	25	45	0	76	0	50	0	6	0	12	0	146	S. 68 37 E.	.12	S. 17 W.	.15½	90
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.55 38 E.	.19	......	...	335
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.						
No. 4. Unalakleet.[3]																						
Autumn	6	9	62	3	19	0	7	0	2	0	3	0	4	0	0	0	12	N.85 0 E.??	.66	......	...	43
Winter	7	0	127	1	3	0	2	0	1	0	3	0	1	0	1	0	13	N.75 54 E.?	.82	......	...	54

[1] Computed from the resultants for the seasons.

[2] Observed from the magnetic meridian, and in the computation of the direction of the resultant an allowance of 30° 30′ is made for the variation of the needle, in accordance with the estimate of the observer.

[3] Observed from the magnetic meridian, and in computing the direction of the resultants, an allowance of 30° 30′ is made for the variation of the needle.

(Nos. 1 to 6½.) **Pacific Ocean and Alaska.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable			Direction.	Force.	
No. 5. Ikogmut.[1]																						
Jan.	203	...	1179	...	528	...	488	...	284	...	325	...	569	...	975	...	5447					
Feb.	1241	...	2943	...	1028	...	355	...	212	...	993	...	496	...	1099	...	1631					
March	1117	.	1277	...	851	...	824	...	53	...	824	...	1037	...	1090	...	2925					
April	663	...	2044	...	1436	...	276	...	000	...	331	...	166	...	1160	...	3923					
May	215	...	1613	...	1720	...	376	...	242	...	995	...	323	...	215	...	4301					
June	580	...	525	...	304	...	829	...	221	...	1298	...	967	...	967	...	4309					
July	1290	...	2420	...	807	...	000	...	000	...	1129	...	1774	...	1230	...	1290					
August	417	...	833	...	833	...	000	...	2916	...	2082	...	000	...	1250	...	1667					
Sept.	454	...	2182	...	2000	...	818	...	273	...	91	...	182	...	545	...	3455					
Oct.	450	...	975	...	1850	...	425	...	100	...	400	...	125	...	1075	...	4600					
Nov.	714	...	1524	...	357	...	571	...	24	...	429	...	453	...	643	...	5286					
Dec.	662	..	1256	...	1096	...	731	...	228	...	845	...	479	...	685	...	4018					
Spring	665	...	1645	...	1338	...	492	...	379	...	717	...	509	...	822	...	3716	N.46°48′E.	.47	N.53°E.	.26½	
Summer	762	...	1259	...	648	...	276	...	241	...	1503	...	914	...	1169	...	2422	N.47 32 W.	.16	S. 78 W.	.24½	
Autumn	539	...	1560	...	1402	...	605	...	98	...	307	...	253	...	754	...	4447	N.53 25 E.	.24	S. 80 E.	.07½	
Winter	702	...	1793	...	884	...	525	...	1046	...	721	...	515	...	920	...	3699	N.50 44 E.	.10	S. 25 W.	.10½	
The y'r	667	...	1564	...	1068	...	474	...	132	...	812	...	584	...	916	...	3571	N.37 53 E.	.20	......	...	1728
No. 6. Nulato.[2]																						
Spring	40	12	63	0	7	0	13	0	10	0	14	0	14	0	58	0	24	N.31 44 E.?	.42	......	...	87
Winter	24	4	22	0	20	1	20	0	13	0	31	0	25	0	27	0	73	N.15 32 W?	.07	......	...	90
No. 6½. Nos. 3, 4 and 6 combined.																						
Spring	360	31	114	0	33	0	27	0	70	0	42	0	38	0	80	0	110	N. 2 51 E.	.51	N. 10°W.	.25	179
Summer	136	0	22	0	34	0	12	0	144	0	84	0	60	0	22	2	30	S. 61 5 W.	.17	S. 32½W.	.40	92
Autumn	68	50	103	11	27	0	17	11	17	0	27	0	8	0	18	62	74	N.21 57 E.	.52	N. 30 E.	.25	104
Winter	129	4	217	1	37	26	67	0	90	0	84	0	32	0	40	0	237	N.53 14 E.	.25	S. 50 E.	.17	234
The y'r[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.14 13 E.	.27	......	...	609

[1] The observations at this place were recorded originally for 16 points of the compass, but were reduced to eight by Mr. Wesselowski, who distributed those from the intervening points equally between the two on either side. He also further modified the record by expressing the number of observations in parts of 10,000. As his communication does not show in what months or seasons of the year the omissions of the 396 days (as already mentioned) occurred, the column headed "number of days" is filled on the assumption that they were distributed uniformly over the entire period.

[2] Observed from the magnetic meridian, and in computing the direction of the resultants an allowance of 30° 30′ is made for the variation of the needle.

Computed from the resultants for the seasons.

(Nos. 7 to 11.) **Hudson's Bay Territory.**

Observed at the following places, viz.:—

Fort Enterprise, by Sir John Franklin, from September 1st, 1820, to August 31st, 1821, but published *in extenso* only from January 12th to May 9th, 1821.

Fort Norman, by Andrew Flett, for five months of 1862 and 1863.

Fort Rae, Great Slave Lake, by Lawrence Clarke, Jr., 1859–60; and by Mrs. Lawrence Clarke, Jr., 1861–64.

Fort Reliance, Great Slave Lake, by Capt. Back, from November 1st, 1833, till May 23d, 1834, and during part of October, 1834.

Fort Simpson, by Capt. Lefroy 18 times a day during the months of April and May (date not preserved), and by Bernard R. Ross for 17 months in the years 1859, 1861 and 1862.

(Nos. 7 to 11.) **Hudson's Bay Territory.**—*Continued.*

Place and kind of observation.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
No. 7. Fort Norman.	Surface winds	Spring	38	6	4	82	7	1	91	44	3	N. 82° 18′ W.	.20	....	......	92
		Winter	15	2	4	63	7	0	41	39	6	S. 67 57 W.	.12	....	......	61
	Motion of clouds	Spring	2	0	0	0	0	0	8	4	0	N. 65 58 W.	.85			
		Winter	1	0	0	0	0	0	17	1	0	N. 84 29 W.	.94			
	Two preceding combined	Spring	40	6	4	82	7	1	99	48	3	N. 79 31 W.	.23			
		Winter	16	2	4	63	7	0	58	40	6	S. 80 52 W.	.19			
No. 8. Fort Simpson.	Surface winds	Spring	43	4	108	106	31	18	54	156	115	N. 13 8 E.	.06	S. 35° E.	.11½	244
		Summer	6	2	24	6	1	6	2	37	6	N. 6 31 W.	.27	N. 10 E.	.12	30
		Autumn	28	50	24	88	12	22	49	144	39	N. 30 45 W.	.19	N. 78 W.	.04½	152
		Winter	34	3	68	69	7	14	67	136	125	N. 39 4 W.	.16	S. 58 W.	.05½	176
		The year[1]	...	...	...	...	...	...	...	...	...	N. 19 27 W.	.16	....	......	602
	Motion of clouds	Spring	1	0	11	3	3	3	17	17	0	N. 72 13 W.	.34	S. 27½ E.	.18	183
		Summer	0	0	0	0	0	3	0	3	0	West	.71	S. 48½ W.	.40	30
		Autumn	4	3	3	0	2	1	2	1	0	N. 22 25 E.	.27	S. 88 E.	.51½	61
		Winter	0	0	0	0	0	0	0	3	0	N. 45 W.	1.00	N. 35 W.	.91½	28
		The year[1]	...	...	...	...	...	...	...	...	...	N. 56 58 W.	.49	....	.53	302
	Two preceding combined	Spring	44	4	119	109	34	21	71	173	115	N. 12 6 W.	.07	S. 33½ E.	.10	
		Summer	6	2	24	6	1	9	2	40	6	N. 16 11 W.	.26	N. 1½ E.	.09½	
		Autumn	32	53	27	88	14	23	51	145	39	N. 28 31 W.	.19	N. 56½ W.	.02½	
		Winter	34	3	68	69	7	14	67	139	125	N. 39 19 W.	.17	S. 60 W.	.04	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 24 51 W.	.17			
No. 9. Fort Rae.	Surface winds	Spring	133	50	61	97	61	14	14	18	104	N. 72 2 E.	.24	....	......	184
		Summer	18	2	17	19	7	0	2	0	28	S. 87 33 E.	.28	....	......	60
		Autumn	157	73	69	61	36	9	35	41	69	N. 31 33 E.	.32	....	......	212
		Winter	139	35	51	37	28	5	34	16	101	N. 24 22 E.	.29	....	......	150
		The year[1]	...	...	...	...	...	...	...	...	...	N. 52 53 E.	.25	....	......	606
	Motion of clouds	Spring	0	0	0	0	0	1	1	0	0	S. 67 27 W.	.93	....	......	31
		Autumn	24	10	12	13	4	0	3	0	0	N. 54 43 E.	.47	....	......	121
		Winter	0	1	1	0	1	0	0	0	0	S. 80 22 E.	.58	....	......	31
	Two preceding combined	Spring	133	50	61	97	61	15	15	18	104	N. 72 8 E.	.20	S. 8½ W.	.08	
		Summer	18	2	11	19	7	0	2	0	28	S. 87 33 E.	.28	S. 26½ E.	.18½	
		Autumn	181	83	81	74	40	9	38	41	69	N. 34 55 E.	.34	N. 1 W.	.12½	
		Winter	139	36	52	37	29	5	34	16	101	N. 25 4 E.	.29	N. 34 W.	.13	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 53 44 E.	.25			

	Months.	North.	N. by E.	N. N. E.	N.E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S.E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S.W. by S.
No. 10. Fort Enterprise.	January	3	1	2	1	4	0	4	7	17	2	0	0	0	0	0	0	4	1	0	1
	February	9	6	15	1	19	1	20	7	12	3	1	0	2	1	0	1	6	0	4	0
	March	11	1	0	1	11	3	11	1	14	6	9	0	7	1	0	3	3	2	3	0
	April	12	2	3	0	14	4	23	2	23	10	0	0	1	0	1	2	2	2	2	1
	May	0	0	0	1	2	0	1	1	2	5	5	3	5	3	0	1	0	1	0	1
	Winter	12	7	17	2	23	1	24	14	29	5	1	0	2	1	0	1	10	1	4	1
	Spring	23	3	3	2	27	7	35	4	39	21	14	3	13	4	1	6	5	6	5	2

	Months.	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	No. of days.
No. 10. Fort Enterprise.	January	4	2	13	4	22	3	10	1	5	0	0	0	3	N. 79° 1′ W.	.23	......	...	20
	February	6	0	12	5	4	4	2	2	14	0	3	2	9	N. 26 45 E.	.30	......	...	28
	March	13	2	9	8	11	5	3	4	15	6	2	0	20	N. 36 6 W.	.08	......	...	31
	April	3	0	3	3	4	2	6	0	5	5	10	6	21	N. 40 2 E.	.36	......	...	30
	May	0	0	3	3	2	0	0	0	0	0	0	0	2	S. 49 45 E.	.46	......	...	9
	Winter	10	2	25	9	26	7	10	3	19	0	3	2	12	N. 86 18 E.	.16	......	...	48
	Spring	16	2	15	14	17	7	9	6	20	11	12	6	43	N. 46 30 E.	.15	......	...	70

[1] Computed from the resultants for the seasons.

(Nos. 7 to 11.) **Hudson's Bay Territory.**—*Continued.*

In the published abstracts for the entire year the winds are classified merely as easterly or westerly, as follows:—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Easterly	14	15½	15¾	18	24	24	17½	15	15	22⅓	18⅔	10¾	210½
Westerly	17	12½	15¼	12	7	6	19½	15	15	17⅔	11⅓	20¼	148½

It appears from the foregoing that the preponderance of easterly winds over westerly amounts to more than 17 per cent. of the whole. And if, with a view to obtain some tolerable approximation to the probable mean direction of the summer and autumn winds, and hence that for the entire year, we distribute each of the two foregoing classes of winds among the several easterly or westerly points, in the same ratio that they actually were distributed in the recorded observations of some month in which the general result was nearly or quite similar, we obtain the following:—

	Summer.	Autumn.	The year.
Mean direction of resultant,	S. 67° 16′ E.	N. 34° 43′ E.	N. 41° 7′ E.
Ratio of resultant to sum of winds,	.14	.20	.13

	Months.	North.	N. N. E.	N. E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E.	South.	S. by W.	S. S. W.	S. W.
No. 11. Fort Reliance, Great Slave Lake.	January	8	0	11	3	3	6	0	0	0	0	0	3	34
	February	9	0	38	6	0	2	0	0	5	4	0	0	23
	March	14	0	26	12	5	5	3	0	2	3	0	0	29
	April	6	0	37	3	6	25	0	3	4	2	0	0	6
	May	0	0	27	12	6	57	0	9	3	0	0	0	2
	October	0	0	0	5	0	22	6	0	3	10	0	0	6
	November	3	0	42	3	14	21	6	6	11	2	4	0	23
	December	13	5	42	9	6	23	3	0	3	2	6	3	30
	Spring	20	0	90	27	17	87	3	12	9	5	0	0	37
	Autumn	3	0	42	8	14	43	12	6	14	12	4	0	29
	Winter	30	5	91	18	9	31	3	0	8	6	6	6	87

	Months.	W. S. W.	W. by S.	West.	W. by N	W. N. W.	N W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	No. of days.
No. 11. Fort Reliance, Great Slave Lake.	January	8	3	5	6	2	6	0	96	S. 69°48′ W.?	.18	31
	February	2	0	12	0	2	3	0	62	N. 13 13 E.?	.10	28
	March	2	2	7	3	2	4	0	66	N. 19 38 E.?	.09	31
	April	2	0	17	0	2	8	0	59	N. 49 20 E.?	.25½	30
	May	2	0	7	0	2	4	0	6	N. 76 51 E.??	.66	23
	October	0	0	0	0	0	0	0	0	S. 64 28 E.???	.60	9
	November	0	0	2	4	0	16	6	17	N. 66 23 E.?	.30	30
	December	0	9	3	0	0	2	0	27	N. 65 21 E.?	.22	31
	Spring	6	2	31	3	6	16	0	131	N. 62 29 E.?	.28	84
	Autumn	0	0	2	4	0	16	6	17	N. 86 30 E.??	.34	39
	Winter	10	12	20	6	4	11	0	185	N. 20 30 E.	.04	90

(No. 12.) **Baffin's Bay and Hudson's Strait.** Longitude 45° to 80° W.

Computed from observations made by John Ross for 12 days in the spring, summer, and autumn of 1818; by Parry, for 81 days in the same seasons for 1819 to 1825; by Snow, for 6 days in the summer and autumn of 1850; by Kane, for 15 days in the summers of 1850 and 1853; and by McClintock for 28 days in the spring, summer, and autumn of 1857, 1858, and 1859, as follows:—

Spring: North 14, N. N. E. 2, N. E. 1, E. N. E. 1, E. S. E. 5, S. E. 12, S. S. W. 4, W. S. W. 5, W.N.W. 1, N. W. 7, N. N. W. 18; calm 2.

Direction of resultant, N. 8° 28′ W.??

Ratio of resultant to sum of winds, .32.

Number of days, 13.

Summer; North 72, N. N. E. 25, N. E. 30, East 56, S. E. 49, S. S. E. 20, South 35, S. S. W. 30, S. W. 44, W. S. W. 28, West 36, W. N. W. 15, N. W. 55, N. N. W. 36; calm 22.

Direction of resultant, N. 48° 56′ W.

Ratio of resultant to sum of winds, .01.

Number of days, 93.

Autumn: North 16, N. N. E. 10, N. E. 24, E. N. E. 3, East 11, E. S. E. 4, S. E. 12, S. S. E. 3, South 11, S. S. W. 15, S. W. 6, W. S. W. 3, West 18, W. N. W. 16, N. W. 33, N. N. W. 24; calm or variable, 7.

Direction of resultant, N. 30° 10′ W.?

Ratio of resultant to sum of winds, .28.

Number of days, 37.

(Nos. 13 and 14.) **Southwestern Greenland.**

Observed at the following places, viz.:—

Friederichthal, from October 1st, 1841, to April 30th, 1842.

New Herrnhutt, from July 1st, 1842, to June 30th, 1843.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 13. New Herrnhutt.	January	2	9	13	0	2	2	3	0	0	N. 71° 41′ E.	.51	......	...	31
	February	1	3	12	3	7	2	0	0	0	S. 63 27 E.	.59	......	...	28
	March	1	5	24	0	0	1	0	0	0	N. 81 53 E.	.87	......	...	31
	April	5	5	7	0	4	4	4	1	0	N. 51 14 E.	.10	......	...	30
	May	4	6	12	0	0	4	5	0	0	N. 57 15 E.	.32	......	...	31
	June	5	2	8	0	0	3	12	0	0	N. 47 40 W.	.21	......	...	30
	July	3	2	6	1	6	3	10	0	0	S. 42 12 W.	.19	......	...	31
	August	11	1	4	0	5	7	3	0	0	N. 61 29 W.	.12	......	...	31
	September	5	0	16	0	5	2	2	0	0	S. 83 37 W.	.42	......	...	30
	October	1	2	7	1	14	2	4	0	0	S. 15 09 E.	.46	......	...	31
	November	0	6	20	1	2	1	0	0	0	N. 88 02 E.	.81	......	...	30
	December	6	8	15	0	2	0	0	0	0	N. 64 56 E.	.73½	......	...	31
	Spring	10	16	43	0	4	9	9	1	0	N. 73 03 E.	.43½	N. 40¾° E.	.14½	92
	Summer	19	5	18	1	11	13	25	0	0	N. 82 11 W.	.13	West	.45	92
	Autumn	6	8	43	2	21	5	6	0	0	S. 70 35 E.	.47	S. 35½ E.	.21	91
	Winter	9	20	40	3	11	4	3	0	0	N. 81 53 E.	.56½	N. 75¼ E.	.25	90
	The year	44	49	144	6	47	31	43	1	0	N. 86 59 E.	.32	......	...	365
No. 14. Friederichthal.	January	28	0	0	0	2	0	0	0	...	North	.84	......	...	30
	February	17	0	0	0	6	0	0	5	...	N. 13 41 W.	.53½	......	...	28
	March	18	0	0	3	10	0	0	0	...	N. 19 50 E.	.20	......	...	31
	April	1	0	0	10	14	0	0	5	...	S. 12 05 E.	.56	......	...	30
	October	31	0	0	0	0	0	0	0	...	North	1.00	......	...	31
	November	21	0	0	6	0	0	0	3	...	N. 6 24 E.	.63	......	...	30
	December	0	0	0	3	25	0	3	0	...	S. 1 51 W.	.88	......	...	31
	Spring	19	0	0	13	24	0	0	5	...	S. 27 58 E.	.20	......	...	61
	Autumn	52	0	0	6	0	0	0	3	...	N. 2 26 E.	.82	......	...	61
	Winter	45	0	0	3	33	0	3	5	...	N. 18 12 W.	.16	......	...	89

(Nos. 15 to 19.) **Southwestern Iceland.**

Observed at the following places, viz. :—

Bessested, by N. Horrebow, in the years 1849, 1850 and 1851.

Reikiavik, by Gladstone and Park, from May 1st to November 20th, 1813; by Dr. Thorstensenius (or in his absence by Capt. Vidalenus), from 1822 to 1836 inclusive;[1] by the French Commission at Reikiavik, and the waters adjacent, for 36 days in the spring of 1840; and by Rev. S. O. Pallsen for an aggregate period of 17 months in the years 1866, 1867 and 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
15. Bessested.	Spring	69	43	60	66	46	46	9	29	0	S. 85° 29′ E.	.20	N. 5½° W.	.15	184
	Summer	62	28	12	42	38	26	8	44	5	N. 8 29 E.	.10	N. 37 W.	.03½	132
	Autumn	20	36	38	89	92	46	30	13	0	S. 22 22 E.	.39	S. 18 W.	.20½	182
	Winter	49	41	54	83	80	34	13	6	0	S. 51 17 E.	.45	S. 50 E.	.18	180
	The year[2]	...	...	...	...	...	...	...	...	...	S. 52 34 E.	.27	......	...	678
16. Reikiavik, 1813 & 1840.	Spring	236	197	168	249	140	74	124	162	262	N. 51 45 E.	.14	......	...	67
	Summer	50	39	32	143	45	42	35	73	27	S. 53 35 E.	.13	......	...	92
	Autumn	149	74	81	74	19	17	25	19	22	N. 45 49 E.	.39	......	...	91
17. Reikiavik, 1823–36.[3]	January	4.22	5.15	5.29	3.21	2.43	5.15	0.43	1.46	3.43	N. 87 15 E.	.20			
	February	4.00	5.29	4.50	3.07	1.71	5.64	0.35	0.93	2.43	N. 83 9 E.	.20			
	March	4.65	4.29	4.93	3.57	2.51	5.36	0.50	1.79	3.21	N. 86 57 E.	.16			
	April	6.07	4.22	3.79	4.15	1.86	4.64	0.07	2.43	2.21	N. 60 11 E.	.19			
	May	4.72	4.00	5.35	5.21	2.28	2.71	1.00	2.06	3.43	N. 80 7 E.	.25			
	June	5.36	2.14	3.07	3.22	2.36	2.93	2.14	5.21	3.57	N. 14 34 W.	.13			
	July	5.35	1.01	2.99	3.08	2.43	3.35	1.71	4.85	5.93	N. 29 44 W.	.12			
	August	4.79	2.00	5.65	2.78	3.00	2.64	1.43	3.78	4.43	N. 52 47 E.	.12			
	September	5.72	3.28	6.50	2.71	2.00	2.58	0.78	2.58	3.57	N. 63 47 E.	.24			
	October	8.00	4.86	5.78	1.64	1.57	4.29	0.99	1.21	2.43	N. 42 2 E.	.27			
	November	7.28	3.43	6.65	2.14	1.93	3.57	0.64	1.00	3.22	N. 57 25 E.	.27			
	December	5.00	4.93	6.22	1.86	1.65	6.50	0.79	0.85	2.86	N. 72 52 E.	.17			
	Spring	15.44	12.51	14.07	12.93	6.65	12.71	1.57	6.28	8.85	N. 75 30 E.	.19			
	Summer	15.50	5.15	11.71	9.08	7.79	8.92	5.28	13.84	13.93	N. 4 39 E.	.10			
	Autumn	21.00	11.57	18.93	6.49	5.50	10.14	2.41	4.79	9.22	N. 50 39 E.	.26			
	Winter	13.22	15.37	16.01	8.14	5.79	17.29	1.57	3.24	8.72	N. 80 53 E.	.19			
	The year	65.16	44.60	60.72	36.64	25.73	49.36	10.83	28.15	40.72	N. 59 21 E.	.17			
18. Reikiavik, 1866–8.	Spring	7	32	26	19	7	10	5	1	17	N. 86 43 E.	.40	N. 68½ E.	.20	123
	Summe	19	14	10	24	18	16	8	6	41	S. 45 23 E.	.12	S. 76½ W.	.13	154
	Autumn	4	5	12	15	11	11	3	6	12	S. 32 17 E.	.26	S. 24½ W.	.18½	91
	Winter	16	36	24	12	3	28	4	2	25	N. 70 30 E.	.23	N. 5½ E.	.13	150
	The year[2]	...	...	...	...	...	...	...	...	...	S. 76 11 E.	.22	......	...	518
19. Reikiavik, aggregate.	Spring	233	215	230	210	106	191	32	96	152	N. 77 54 E.	.21	S. 59½ E.	.06	
	Summer	245	94	180	178	136	149	88	213	241	N. 16 38 E.	.06½	S. 85 W.	.14	
	Autumn	326	181	292	120	92	155	41	77	145	N. 53 30 E.	.26	N. 34 E.	.10	
	Winter	201	251	248	126	84	270	26	47	147	N. 79 47 E.	.19	S. 41 E.	.05	
	The year	1005	741	950	634	418	765	187	433	685	N. 64 17 E.	.17	......	...	

[1] The earlier observations were made at the village of Raes near Reikiavik.

[2] Computed from the resultants for the seasons.

[3] The resultants are those computed by Prof. S. Holmsted, modified by the effect of calms.

(No. 20.) **Atlantic Ocean.** Longitude 35° W. to 10° E.

Computed from observations made by John Ross for 16 days in the autumn of 1818; by the French Commission for 84 days in the summer and autumn of 1838, 1839 and 1840; by Snow for 3 days in 1850; and by McClintock for 7 days in 1857, as follows:—

Summer: North 31, N. N. E. 54, N. E. 51, E. N. E. 86, East 111, E. S. E. 79, S. E. 44, S. S. E. 6, South 48, S. S. W. 21, S. W. 20, W. S. W. 32, West 75, W. N. W. 42, N. W. 37, N. N. W. 26; calm or variable, 72 (?).

(No. 20.) **Atlantic Ocean.**—*Continued.*

Direction of resultant, N. 68° 11′ E.
Ratio of resultant to sum of winds, .02.
Number of days, 71.

Autumn: North 20, N. N. E. 17, N. E. 23, E. N. E. 11, East 22, E. S. E. 53, S. E. 36, S. S. E. 33, S. 66, S. S. W. 21, S. W. 36, W. S. W. 21, West 42, W. N. W. 15, N. W. 48; calm or variable 42.
Direction of resultant, S. 2° 7′ W. (??).
Ratio of resultant to sum of winds, .19.
Number of days, 42.

(Nos. 21 to 23.) **Faroe and Shetland Islands.**

Observed at the following places, viz.:—
Bressay, Shetland, for 11 years, 1857 to 1867.
East Yell, Shetland, by A. Matthewson, for 29 months in the years 1863 to 1868.
Thorshavn, Faroe, for 4 years, 1866 to 1870.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
No. 21. Thorshavn.[1]	January	2	6	2	4	5	6	4	2	0	....	...	......	...	124
	February	3	2	1	3	3	7	4	4	1	....	...	......	...	113
	March	6	5	1	3	2	5	4	4	1	....	...	......	...	124
	April	2	7	2	4	3	6	4	1	1	....	...	......	...	120
	May	3	7	4	4	2	5	4	1	1	....	...	......	...	124
	June	3	2	2	3	1	7	7	3	2	....	...	......	...	120
	July	3	3	2	2	3	9	5	1	3	....	...	......	...	124
	August	3	4	2	3	3	6	3	3	4	....	...	......	...	124
	September	4	8	2	3	1	6	3	2	1	....	...	......	...	120
	October	3	2	2	4	2	8	6	3	1	....	...	......	...	124
	November	6	4	0	3	3	5	4	4	1	....	...	......	...	120
	December	4	3	3	4	2	7	4	3	1	....	...	......	...	124
	Spring	11	19	7	11	7	16	12	6	3	N. 14° 18′ E.	.03	N. 62° E.	.13	368
	Summer	9	9	6	8	7	22	15	7	9	S. 65 41 W.	.21	S. 56½ W.	.10	368
	Autumn	13	14	4	10	6	19	13	9	3	N. 76 55 W.	.13	N. 19½ W.	.06	364
	Winter	9	11	6	11	10	20	12	9	2	S. 51 18 W.	.16	S. 15 W.	.07½	361
	The year	42	53	23	40	30	77	52	31	17	S. 74 2 W.	.11	......	...	1461
No. 22. Bressay.[1]	January	3	3	2	5	5	8	3	1	1	....	...	......	...	341
	February	2	3	1	6	4	6	3	2	1	....	...	......	...	310
	March	3	5	3	4	3	7	3	2	1	....	...	......	...	341
	April	3	5	2	4	3	6	3	3	1	....	...	......	...	330
	May	3	6	4	3	4	6	2	2	1	....	...	......	...	341
	June	3	4	3	3	3	7	3	2	2	....	...	......	...	330
	July	2	6	2	2	3	7	4	3	2	....	...	......	...	341
	August	3	3	2	5	3	7	3	2	3	....	...	......	...	341
	September	1	2	2	5	4	8	4	2	2	....	...	......	...	330
	October	2	3	2	5	4	8	3	2	2	....	...	......	...	341
	November	3	4	1	5	4	4	3	3	3	....	...	......	...	330
	December	2	3	1	6	5	8	4	1	1	....	...	......	...	341
	Spring	9	16	9	11	10	19	8	7	3	S. 16 2 E.	.07	N. 35½ E.	.12	1012
	Summer	8	13	7	10	9	21	10	7	7	S. 36 43 W.	.12	N. 19½ W.	.10½	1012
	Autumn	6	9	5	15	12	20	10	7	7	S. 20 7 W.	.23	S. 29 W.	.06½	1001
	Winter	7	9	4	17	14	22	10	4	3	S. 13 18 W.	.29	S. 8 W.	.12	992
	The year	30	47	25	53	45	82	38	25	20	S. 16 46 W.	.17	......	...	4017
No. 23. East Yell.	Spring	50	18	13	19	40	34	35	35	2	N. 77 22 W.	.19	N. 49 E.	.13	246
	Summer	48	24	14	29	51	55	94	53	0	S. 86 10 W.	.32	N. 52 W.	.04	369
	Autumn	25	18	17	23	53	63	65	38	0	S. 61 27 W.	.34	S. 6¼ W.	.12	302
	Winter	44	19	10	19	27	73	62	35	0	S. 84 27 W.	.35	N. 80½ W.	.07	299
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 14 W.	.29	......	...	1216

[1] Reduced by Dr. Buchan from the original observations.
[2] Computed from the resultants for the seasons.

(Nos. 24 to 30.) **Western and Central Norway.**

Observed at the following places, viz.:—

Aalesund, by Mo for 6 years, 1861 to 1867 inclusive.

Bergen, for 8 years, 1861 to 1868 inclusive.

Christiansund, by Hauge and Tensberg for 7 years, 1861 to 1867 inclusive.

Dovre, at the Telegraph Station from August, 1864 to December, 1867 inclusive.

Drontheim, by the French Commission for a few days in June and July, 1838.

Soendmor, from November, 1849, to August, 1851 inclusive.

Villa, from 3 to 4 years, 1865 to 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
24. Aalesund	January	20	123	242	111	90	236	93	16	69	......	...	......	...	217
	February	31	145	213	82	77	273	108	17	54	......	...	......	...	197
	March	70	193	221	79	78	181	80	41	57	......	...	......	...	217
	April	124	158	82	40	77	231	125	63	100	......	...	......	...	210
	May	194	250	71	23	33	132	135	87	75	......	...	......	...	217
	June	184	201	53	24	30	130	157	115	106	......	...	......	...	210
	July	180	166	57	23	33	133	192	116	100	......	...	......	...	217
	August	165	183	73	40	30	146	145	107	111	......	...	......	...	217
	September	79	83	186	98	71	225	134	59	115	......	...	......	...	210
	October	37	86	186	96	85	256	139	49	66	......	...	......	...	217
	November	56	139	182	94	87	234	97	47	64	......	...	......	...	210
	December	34	100	164	88	70	314	135	55	40	......	...	......	...	217
	Spring	388	601	374	142	188	544	340	191	232	N. 8° 12′ E.	.09	N. 24° E.	.10½	644
	Summer	529	550	183	87	93	409	494	338	317	N. 28 36 W.	.27	N. 22 W.	.26½	644
	Autumn	172	308	554	288	243	715	470	155	245	S. 13 38 W.	.15	S. 3 W.	.14	637
	Winter	85	368	619	281	237	823	336	88	163	S. 9 6 E.	.21	S. 17½ E.	.21	631
	The year	1174	1827	1730	798	761	2491	1640	772	957	S. 78 17 W.	.03	......	...	2556
25. Soendmor	The year	697	252	388	434	939	239	1390	199	...	S. 59 17 W.	.17	......	...	4382
26. Dovre	January	9	0	18	11	187	54	18	22	681	......	...	......	...	93
	February	10	10	19	31	193	27	15	47	648	......	...	......	...	84
	March	29	14	3	12	155	8	14	18	747	......	...	......	...	93
	April	83	12	0	49	114	33	19	59	631	......	...	......	...	90
	May	52	40	14	31	160	42	13	64	584	......	...	......	...	93
	June	78	9	13	13	120	30	11	147	579	......	...	......	...	90
	July	75	12	9	17	124	8	8	71	676	......	...	......	...	93
	August	22	27	3	29	209	24	31	30	625	......	...	......	...	124
	September	14	0	0	46	263	42	20	35	580	......	...	......	...	120
	October	30	16	12	36	176	16	2	51	661	......	...	......	...	124
	November	55	9	0	51	137	25	25	107	591	......	...	......	...	120
	December	36	9	0	27	200	32	32	76	588	......	...	......	...	124
	Spring	169	66	17	90	429	83	46	141	1962	S. 17 52 W.	.08	N. 26 E.	.04	276
	Summer	175	48	25	59	453	62	50	248	1880	S. 47 32 W.	.08	N. 17 W.	.06	307
	Autumn	99	25	12	133	576	83	47	193	1852	S. 13 59 W.	.16	S. 4 E.	.03	364
	Winter	55	19	37	69	580	113	65	145	1917	S. 15 25 W.	.19	S. 7½ W.	.07	301
	The year	498	158	91	351	2038	341	208	727	7611	S. 20 3 W.	.12	......	...	1248
27. Christiansund	January	29	32	112	303	113	142	145	36	88	......	...	......	...	217
	February	22	50	81	242	116	182	138	60	109	......	...	......	...	197
	March	34	56	99	245	127	139	125	70	105	......	...	......	...	217
	April	64	140	56	141	51	108	207	90	143	......	...	......	...	210
	May	107	252	70	80	20	95	177	78	121	......	...	......	...	217
	June	123	213	46	36	24	89	184	90	195	......	...	......	...	210
	July	149	214	36	40	17	62	233	101	148	......	...	......	...	217
	August	87	208	79	95	25	98	172	83	153	......	...	......	...	217
	September	36	59	89	183	69	147	152	75	190	......	...	......	...	210
	October	17	46	97	202	78	177	183	79	121	......	...	......	...	217
	November	60	36	72	258	96	198	119	64	97	......	...	......	...	210
	December	34	21	82	237	103	187	186	88	62	......	...	......	...	217
	Spring	205	448	225	466	198	342	509	238	369	S. 31 6 W.	.03	N. 22 E	.07	644
	Summer	359	635	161	171	66	249	599	274	496	N. 20 26 W.	.23	N. 21½ E.	.03½	644
	Autumn	113	141	258	643	243	522	454	218	408	S. 13 18 W.	.24	S. 5½ W.	.14½	637
	Winter	85	103	275	782	332	511	469	184	259	S. 3 34 W.	.32	S. 5½ E.	.23	631
	The year	762	1327	919	2062	839	1624	2031	914	1532	S. 24 55 W.	.10	......	...	2556

28. Drontheim. The observations at this place are included with those made at sea in the vicinity, No. 20.

Dr. Buchan, in his work on the prevailing winds over the globe, gives them for the several months of the year at Bergen and Villa as follows, viz.:—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
29. Bergen,	S.	S.	S.	S. & N.	S. & N.	N.	N.	S. & N.	S.	S.	S.	S.
30. Villa,	S. E.	S. E.	S. E.	S. E.	S. W.	S. W.	S. W.	S. W.	S. E.	S. E.	W. & S. E.	S. E.

(Nos. 31 to 36.) **Middle Sweden.**

Observed at the following places, viz. :—

Fahlun, by A. F. Boberg during the years 1860 to 1866 inclusive.

Gefle, by B. Hwasser from December, 1858, to December, 1866, inclusive.

Hernosund, E. A. W. Hybineth from December, 1858, to December, 1866, inclusive.

Holmia, during the years 1783, 1784, and 1785.

Ostersund, by Miss Anna Afzelius from October, 1860, to December, 1866, inclusive.

Umea, by E. M. Waldenstrom from December, 1858, to December, 1866, inclusive.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
No. 31. Ostersund.																						
Spring	121	5	32	2	48	15	184	15	87	4	43	3	26	44	227	25	761	N.31°24′W.	.06	N. 1°W.	.05	
Summer	179	4	37	1	48	1	155	13	109	9	72	1	43	12	320	18	592	N.42 9 W.	.14	N.33 W.	.11	
Autumn	112	0	26	0	138	16	230	13	167	21	177	2	45	20	210	19	610	S. 4 42 W.	.10	S. 12 E.	.10½	
Winter	49	5	52	0	57	16	262	3	68	2	65	1	32	31	185	16	874	S. 39 35 E.	.05	S. 55½E.	.08	
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.85 26 W.	.03			
No. 32. Fahlun																						
Spring	100	65	139	49	62	42	94	75	108	88	94	45	76	52	130	92	605	N.30 7 W.	.03	N.36 E.	.05½	
Summer	126	42	133	52	85	38	148	85	154	127	137	76	68	33	130	79	409	S. 8 34 W.	.07	S. 34 E.	.06	
Autumn	116	43	70	20	37	29	118	60	140	112	131	55	92	38	173	73	599	S. 66 43 W.	.11	S. 63½W.	.06	
Winter	145	49	98	44	51	34	111	65	95	56	88	50	99	46	109	79	677	N.44 9 W.	.05	N.12 E.	.05½	
The y'r	487	199	440	165	235	143	471	285	497	383	450	226	335	169	542	323	2290	S. 70 21 W.	.05			
No. 33. Gefle.																						
Spring	134	38	158	68	193	7	36	17	158	29	109	30	68	16	52	13	770	N.72 24 E.	.08	N.47½E.	.08½	
Summer	141	68	203	87	265	7	28	16	263	40	149	60	93	9	44	16	586	S. 81 19 E.	.11	N.71½E.	.09½	
Autumn	126	27	66	24	65	3	42	38	199	51	130	54	58	9	31	12	822	S. 19 8 W.	.11	S. 43 W.	.07½	
Winter	120	21	48	20	72	5	54	18	180	49	164	46	111	15	49	11	879	S. 40 47 W.	.13	S. 63½W.	.11	
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 18 26 E.	.05			
No. 34. Hernosund.																						
Spring	167	54	127	34	160	29	99	53	203	55	136	2	112	81	207	41	543	N.42 9 W.	.03	N. 23 E.	.09	
Summer	173	31	90	53	182	26	131	39	373	90	162	11	87	40	172	72	364	S. 1 28 W.	.11	S. 44½E.	.07	
Autumn	136	23	52	16	78	21	87	54	282	76	108	19	141	32	133	57	686	S. 40 49 W.	.13	S. 37 W.	.05	
Winter	153	48	95	19	60	10	102	59	201	76	169	17	127	31	169	43	814	S. 65 50 W.	.09	N.51 W.	.03½	
The y'r	629	156	254	122	480	86	419	205	1059	297	575	49	467	184	681	213	2407	S. 42 26 W.	.08			
No. 35. Nos. 33 and 34 combined.																						
Spring	301	92	285	102	353	36	135	70	361	84	245	32	180	97	259	54	1313	N.53 10 E.	.04	N.31½E.	.09½	
Summer	314	99	293	140	447	33	159	55	636	130	311	71	180	49	216	88	950	S. 42 14 E.	.08	S. 89½E.	.07	
Autumn	262	50	118	40	143	24	129	92	481	127	238	73	199	41	164	69	1508	S. 35 59 W.	.13	S. 50 W.	.07½	
Winter	273	69	143	39	132	15	156	77	381	125	333	63	238	46	218	54	1693	S. 51 5 W.	.11	S. 79 W.	.07	
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 18 7 W.	.06			
No. 35 (*a*). Holmia.																						
The y'r	299	81	200	73	225	47	178	72	199	94	279	124	398	66	188	73	...	N.84 48 W.	.12			
No. 36. Umea.																						
Spring	169	65	226	87	170	41	73	48	285	107	210	22	97	32	138	31	321	S. 46 37 E.	.06	S. 73½E.	.06	
Summer	128	55	205	53	187	55	124	92	399	142	180	20	94	54	109	42	180	S. 20 7 E.	.19	S. 27½E.	.17	
Autumn	297	72	200	29	95	14	81	21	215	80	331	32	152	34	197	41	285	N.71 21 W.	.13	N.60 W.	.12½	
Winter	335	73	228	67	128	25	85	22	221	54	294	28	147	24	180	68	297	N.26 56 W.	.10	N.15½W.	.11½	
The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 32 28 W.	.03			

[1] Computed from the resultants for the seasons.

(No. 37.) Aland Islands, Baltic Sea.

Transcribed from the elaborate work on the Climate of Russia, by C. Wesselowski, who quotes from the publications of Prof. Hällstrom, in the Transactions of the Scientific Society of Finland. The observations were made by Dr. Stadius, for a period of 10 years, from 1818 to 1827 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
No. 37. Aland Islands.	January	769	1304	385	1137	619	2910	836	2040	...	S. 81° 08′ W.	.22½	....	...	310
	February	1214	875	286	1000	1018	3429	803	1375	...	S. 62 32 W.	.29	....	...,	282
	March	862	763	381	1285	1186	3065	678	1780	...	S. 54 51 W.	.28	....	...	310
	April	1869	813	242	1384	1484	2211	385	1612	...	S. 71 06 W.	.13½	....	...	300
	May	1947	952	190	1245	996	2211	322	2136	...	N. 67 18 W.	.18	....	...	310
	June	2256	421	135	606	1599	1717	370	2896	...	N. 63 51 W.	.31	....	...	300
	July	2629	416	183	816	1497	2113	416	1930	...	N. 72 03 W.	.23½	....	...	310
	August	1669	637	241	947	1687	2323	482	2014	...	S. 78 14 W.	.22½	....	...	310
	Sept'mber	938	563	206	1557	1595	3021	638	1482	...	S. 40 51 W.	.32½	....	...	300
	October	551	606	83	606	1543	4628	413	1570	...	S. 50 43 W.	.50	....	...	310
	November	892	493	277	1508	1415	3292	277	1846	...	S. 44 25 W.	.31½	....	...	300
	December	415	959	256	1022	1214	3259	1182	1693	...	S. 51 11 W.	.36	....	...	310
	Spring	1559	843	271	1305	1222	2496	462	1843	...	S. 75 24 W.	.18	N. 53° E.	.08	920
	Summer	2185	491	186	790	1594	2051	423	2280	...	N. 77 18 W.	.24½	N. ½ W.	.15	920
	Autumn	794	554	189	1224	1518	3647	443	1633	...	S. 46 11 W.	.38	S. 12½ W.	.17½	910
	Winter	799	1046	309	1053	950	3199	940	1703	...	S. 65 05 W.	.29	S. 43 W.	.04	902
	The year	1334	734	239	1093	1321	2848	567	1865	...	S. 68 26 W.	.25½	....	...	3652

(Nos. 38 to 59.) Finland.

Observed at the following places, viz. :—

Abo, at the University for 77 years, from 1749 to 1826 inclusive, by Profs. Lexe, Kalm, Hellenius, Planman, Meter, and Hällstrom.

Galiko, for 8 years, 1818 to 1825 inclusive, by Rev. Dr. Ignatius.

Helsingfors,by Hällstrom, for 12 years, 1829 to 1841 ; also at intervals of 20 minutes, or 72 observations per day, from December, 1852, to November, 1853, inclusive.

Hogland Lighthouse, during the year 1866, by Antzeff.

Ilmola, by Pastor Frosterus, for 9 years (1818 to 1826 inclusive).

Kajan, by Rev. Dr. Eumelius, during the years 1818 and 1819.

Kalaioki, by Rev. Dr. Frosterus, for 9 years (1818 to 1826 inclusive).

Laichela (formerly Vasa) on the shore of the Gulf of Bothnia, by Sterval, for 4 years (1751 to 1754 inclusive).

Lemo Ganula, by Dr. Freidental, for 9 years (1818 to 1826 inclusive).

Loukas, by Pastor Axwidson, for 8 years (1818 to 1825 inclusive).

Paldamo (near Kajan), by Rev. Dr. Eumelius, for 5 years (1824 to 1828 inclusive).

Storkiro, by Reimius, for 10 years (1831 to 1848).

Sweaborg, from December, 1852, to November, 1853, inclusive, and published in Kupffer's Annals, 1853.

Tammela, by Rev. Dr. Tolpo, for 14 years (1818 to 1831 inclusive).

Uleaborg, by Julin, for 12 years (1776 to 1787 inclusive); and by Rev. Dr. Frosterus, for 12 years (1818 to 1829 inclusive). A part of the latter series was made at the neighboring island, Karle.

Varo, by Dr. Vegelius, for 25 years (1800 to 1825).

Virdois, by Perden, for 7 years (1826 to 1832 inclusive).

(Nos. 38 to 59.) **Finland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
38. Laichela[1]	The year	154	96	97	68	184	170	134	97	...	S. 66° W	.12	......	...	1461
39. Storkiro[2]	January	915	1176	1216	1647	811	1451	2143	641	...	S. 27 5 W.	.09	......	...	310
	February	673	723	1446	1783	1397	1671	1771	536	...	S. 2 51 W.	.13½	......	...	283
	March	1129	1173	1777	1502	1009	1140	1568	702	...	S. 62 06 E.	.09	......	...	310
	April	1265	1191	1665	1180	695	864	1960	1180	...	N. 4 33 W.	.08	......	...	300
	May	2397	830	1076	820	758	891	1937	1291	...	N. 32 40 W.	.23	......	...	310
	June	1868	822	1409	928	854	1078	1910	1131	...	N. 40 13 W.	.13	......	...	300
	July	1736	833	1632	995	914	1343	1667	880	...	N. 39 25 W.	.05	......	...	310
	August	1678	812	1394	1218	785	1001	1894	1218	...	N. 39 50 W.	.10	......	...	310
	September	905	613	1751	1591	993	1300	1971	876	...	S. 10 21 W.	.11	......	...	300
	October	800	400	1588	2230	1225	1430	1636	691	...	S. 7 55 E.	.22½	......	...	310
	November	714	1186	1142	1929	1157	2272	1043	557	...	S. 7 52 E.	.22	......	...	300
	December	603	972	1631	2246	836	2110	1287	315	...	S. 20 38 E.	.25½	......	...	310
	Spring	1597	1065	1506	1167	821	965	1822	1058	...	N. 12 26 W.	.08	N. 2 W.	.13	920
	Summer	1761	822	1478	1047	851	1141	1824	1076	...	N. 39 50 W.	.09	N. 20 W.	.13	920
	Autumn	806	733	1494	1917	1125	1667	1550	708	...	S. 4 17 E.	.18	S. 11½ E.	.13	910
	Winter	730	957	1431	1892	1015	1744	1734	497	...	S. 3 52 E.	.18	S. 11¼ E.	.13	903
	The year	1224	894	1477	1506	953	1379	1732	835	...	S. 13 03 W.	.05½	......	...	3653
40. Varo[2]	January	1057	387	882	3195	1968	822	662	1027	...	S. 27 47 E.	.31	......	...	775
	February	1124	162	970	3195	2249	744	487	1069	...	S. 27 23 E.	.34½	......	...	706
	March	1148	414	852	2154	1044	1073	710	1605	...	S. 2 06 E.	.18½	......	...	775
	April	1619	455	999	1815	1330	1244	906	1634	...	S. 40 20 W.	.05	......	...	750
	May	1683	389	866	1324	1346	893	991	2508	...	N. 58 11 W.	.15½	......	...	775
	June	1502	435	903	1006	1018	1084	1199	2853	...	N. 57 9 W.	.24½	......	...	750
	July	1829	373	1175	1285	1053	1092	1000	2193	...	N. 47 01 W.	.13½	......	...	775
	August	1404	339	871	1581	1755	1313	1003	1734	...	S. 44 56 W.	.13	......	...	775
	September	970	377	951	2005	1681	1190	1282	1544	...	S. 19 47 W.	.17	......	...	750
	October	974	462	1014	2916	1483	1024	981	1146	...	S. 22 21 E.	.23½	......	...	775
	November	821	666	1225	3003	1657	896	718	1014	...	S. 36 03 E.	.30	......	...	750
	December	899	483	1264	3345	1748	740	645	876	...	S. 38 11 E.	.35½	......	...	775
	Spring	1483	419	906	1764	1573	1070	869	1916	...	S. 50 12 W.	.07	N. 40½ W.	.10½	2300
	Summer	1578	382	983	1291	1275	1163	1067	2260	...	N. 71 47 W.	.14	N. 41¼ W.	.29½	2300
	Autumn	922	502	1063	2641	1607	1037	994	1235	...	S. 20 10 E.	.22	S. 37 E.	.10½	2275
	Winter	1027	344	1039	3245	1988	769	598	991	...	S. 31 17 E.	.33½	S. 44¾ E.	.23	2256
	The year	1253	412	998	2235	1611	1010	882	1600	...	S. 6 35 E.	.12½	......	...	9131
41. Ilmola[2]	January	1083	271	2355	271	1833	792	3062	333	...	S. 46 09 W.	.16	......	...	279
	February	1148	419	3170	73	2932	619	1384	255	...	S. 40 09 E.	.23½	......	...	254
	March	1296	222	1982	815	2259	815	2074	537	...	S. 11 16 W.	.16	......	...	279
	April	2626	323	2402	224	1152	604	2079	590	...	N. 5 00 W.	.15½	......	...	270
	May	2738	456	1617	130	1199	939	2295	626	...	N. 41 30 W.	.20½	......	...	270
	June	2306	499	1773	241	809	757	2599	1016	...	N. 39 52 W.	.24½	......	...	270
	July	2650	700	2283	234	633	467	2150	883	...	N. 3 29 W.	.26½	......	...	279
	August	2131	219	1785	364	1129	1020	2532	820	...	N. 65 09 W.	.18	......	...	279
	September	1638	149	2511	234	1553	787	2809	319	...	S. 69 17 W.	.08½	......	...	270
	October	1406	178	2811	462	1566	872	2331	374	...	S. 4 08 E.	.07	......	...	279
	November	1239	372	2725	690	1487	956	2018	513	...	S. 28 04 E.	.09	......	...	270
	December	757	310	2857	688	1532	775	2737	344	...	S. 1 28 E.	.13½	......	...	279
	Spring	2220	334	2000	390	1537	786	2149	584	...	N. 50 07 W.	.08	N. 25½ W.	.05	828
	Summer	2362	473	1947	280	857	748	2427	906	...	N. 32 24 W.	.20½	N. 23 W.	.08	828
	Autumn	1428	233	2682	462	1535	872	2386	402	...	S. 10 41 W.	.06	S. 26 E.	.07	819
	Winter	996	333	2794	344	2099	729	2394	311	...	S. 5 56 E.	.14	S. 21½ E.	.15½	812
	The year	1751	343	2356	369	1507	784	2339	551	...	N. 81 30 W.	.04	......	...	3287
42. Western Finland, lat. 62⅓–63⅓ N. long. 21⅓–22½ E.[3]	Spring	5300	1818	4412	3321	3931	2821	4840	3576	...	N. 57 29 W.	.05	N. 19 W.	.09	
	Summer	5701	1677	4408	2618	2983	3052	5318	4242	...	N. 46 19 W.	.14	N. 30 W.	.18	
	Autumn	3156	1468	5239	5020	4267	3576	4930	2345	...	S. 8 59 E.	.15	S. 21½ E.	.10	
	Winter	2753	1634	5264	5481	5102	3242	4728	1799	...	S. 18 12 E.	.21½	S. 29 E.	.16½	
	The year	4382	1745	4928	4178	4255	3343	5087	3083	...	S. 12 18 W.	.06	......	...	

[1] Transcribed from Wesselowski, who quotes from the Minutes of the Swedish Academy for 1758.

[2] Transcribed (except the last three columns) from Wesselowski, who quotes from Hällstrom, etc. See Aland Islands, No. 37.

[3] Computed from the foregoing observations at Laichela, Storkiro, Varo, and Ilmola.

(Nos. 38 to 59.) **Finland.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
43 Lemo Ganula[1]	January	1331	672	1317	1196	1519	2513	753	699	...	S. 11° 51′ W.	.19	N. 66½° E.	.10	279
	February	929	649	1475	1430	1814	2316	885	502	...	S. 1 25 E.	.27½	S. 71¼ E.	.14½	254
	March	927	659	793	1519	2446	2218	672	766	...	S. 8 06 W.	.32	S. 44½ E.	.12½	279
	April	1189	775	801	1434	1447	2377	943	1034	...	S. 31 18 W.	.19½	N. 27 E.	.07	270
	May	920	908	550	980	1255	2652	1039	1696	...	S. 64 31 W.	.24½	N. 40½ W.	.15	279
	June	716	741	408	840	1456	2741	1272	1825	...	S. 63 53 W.	.33	N. 76½ W.	.18½	270
	July	657	1063	610	1003	1721	2724	1123	1099	...	S. 38 57 W.	.28	N. 72 W.	.05	279
	August	586	275	490	896	2222	2795	836	1900	...	S. 46 20 W.	.39	S. 76 W.	.16	279
	September	716	630	778	1062	2012	2753	753	1296	...	S. 31 57 W.	.31	S. 44½ W.	.04½	270
	October	645	502	992	1243	2545	2401	788	884	...	S. 14 12 W.	.36	S. 20 E.	.13	279
	November	1025	790	1185	1346	1457	2506	864	827	...	S. 14 38 W.	.21	N. 71 E.	.08½	270
	December	717	753	1218	1111	1709	2808	681	1003	...	S. 18 26 W.	.26½	S. 67 E.	.05½	279
	Spring	1012	781	715	1311	1716	2416	885	1165	...	S. 31 56 W.	.23	N. 18½ W.	.03½	828
	Summer	653	693	503	913	1800	2753	1077	1608	...	S. 50 05 W.	.33	N. 83 W.	.12	828
	Autumn	795	641	985	1217	2005	2553	802	1002	...	S. 20 35 W.	.29	S. 37 E.	.05½	819
	Winter	992	691	1337	1246	1681	2546	773	735	...	S. 9 21 W.	.24	S. 86 E.	.09½	812
	The year	863	701	885	1172	1800	2567	884	1128	...	S. 29 25 W.	.26½			
44. Abo[1]	January	1539	1748	924	978	1865	1470	731	745	...	S. 61 53 E.	06½	N. 60 E.	.12	2387
	February	1368	1251	843	1194	2233	1632	685	794	...	S. 6 54 E.	.14½	S 47½ E.	.09½	2174
	March	1516	1327	787	937	1936	1539	813	1145	...	S. 37 23 W.	.05½	N. 33½ E.	.04	2387
	April	1426	1166	770	1140	1916	1573	974	1045	...	S. 26 41 W.	.09½	S. 58½ E.	.01½	2310
	May	1278	1165	720	897	1579	2054	995	1312	...	S. 62 00 W.	.13½	N. 78 W.	.06½	2387
	June	1417	1006	707	812	1558	1957	1244	1299	...	S. 73 12 W.	.16	N. 72 W.	.10	2310
	July	1041	1164	704	956	1352	2287	1288	1208	...	S. 53 13 W.	.18	S. 70½ W.	.09½	2387
	August	908	1130	825	968	1373	2420	1201	1175	...	S. 49 22 W.	.19	S. 62½ W.	.05	2387
	September	1118	1278	767	886	1554	2244	968	1185	...	S. 50 22 W.	.14	S. 75 W.	.05½	2310
	October	1251	1162	631	1181	1537	2148	1019	1071	...	S. 43 30 W.	.14½	S. 56 W.	.05	2387
	November	1185	1727	999	1185	1421	1732	891	860	...	S. 35 27 E.	.06	N. 73 E.	.09½	2310
	December	1236	1598	1164	1187	1659	1600	640	916	...	S. 49 13 E.	.09½	N. 78½ E.	.14	2387
	Spring	1407	1219	759	991	1810	1722	927	1167	...	S. 45 40 W.	.09	N. 33 W.	.02	7084
	Summer	1122	1100	745	912	1428	2221	1244	1227	...	S. 59 58 W.	.17½	S. 83½ W.	.10	7084
	Autumn	1185	1389	799	1084	1504	2041	959	1039	...	S. 36 00 W.	.10	S. 34 W.	.00½	7007
	Winter	1381	1532	977	1120	1919	1567	685	818	...	S. 31 47 E.	.15	S. 71 E.	.14½	6948
	The year	1274	1310	820	1027	1665	1888	954	1063	...	S. 36 18 W.	.09½	......	...	28123
45. South-western Finland[2]	Spring	2419	2000	1474	2302	3526	4138	1812	2332	...	S. 35 46 W.	.16	N. 2 W.	.02	
	Summer	1775	1793	1248	1825	3228	4974	2321	2835	...	S. 53 30 W.	.25	N. 87 W.	.11	
	Autumn	1980	2030	1784	2301	3509	4594	1761	2041	...	S. 24 29 W.	.19½	S. 25½ E.	.03	
	Winter	2373	2223	2314	2366	3600	4113	1458	1553	...	S. 1 43 E.	.15½	S. 88½ E.	.10	
	The year	2137	2011	1705	2199	3465	4455	1838	2191	...	S. 31 13 W.	.18	.		
46. Galiko	January	1371	817	693	555	1757	1140	2049	1618	...	N. 86 38 W.	.23½	N. 20½ W.	.10	248
	February	1323	1134	859	807	2595	1031	1512	739	...	S. 23 06 W.	.15½	S. 64½ E.	.15	234
	March	1123	754	815	615	2262	1708	1600	1123	...	S. 51 22 W.	.23	S. 26½ E.	.07	248
	April	1834	734	845	734	1547	1260	1722	1324	...	N. 78 43 W.	.17	N. 14½ E.	.12	240
	May	1708	877	815	580	1600	1754	1461	1200	...	S. 87 32 W.	17	N. 19 E.	.07½	248
	June	1645	1054	639	463	1645	959	2173	1422	...	N. 70 50 W.	.23	N. 11 W.	.16	240
	July	930	558	698	543	2403	1535	1938	1395	...	S. 58 21 W	.30	S. 37 W.	.10	248
	August	1182	529	296	435	1928	1493	2457	1680	...	S. 81 38 W.	.38	N. 84 W.	.18	248
	September	812	637	701	653	2277	2213	1529	1178	...	S. 46 26 W.	.32	S. 13 W.	.15	240
	October	1183	645	369	998	2596	1413	1306	1490	...	S. 48 40 W.	.24½	S. 9 E.	.08½	248
	November	1470	879	687	1166	1645	1374	1693	1086	...	S. 62 52 W.	.14	N. 72 E.	.07	240
	December	1433	662	663	1001	1911	1418	1217	1695	...	S. 71 43 W.	.13	N. 63 E.	.08	248
	Spring	1555	788	825	643	1803	1574	1594	1216	...	S. 77 13 W.	.17½	N. 32 E.	.05	736
	Summer	1252	714	544	480	1992	1329	2189	1499	...	S. 80 41 W.	.28	N. 67 W.	.08½	736
	Autumn	1155	720	586	939	2173	1667	1509	1251	...	S. 50 58 W.	.23	S. 9 E.	.07	728
	Winter	1376	871	738	788	2088	1196	1593	1351	...	S. 69 43 W.	.16	N. 65½ E.	.05	722
	The year	1335	773	673	712	2014	1442	1721	1329	...	S. 68 .03 W.	.21	......	...	2922

[1] Transcribed (except the three right hand columns) from Wesselowski, who quotes from Hällstrom, etc., as at Aland Islands, No. 37. See page 102.
[2] Computed from the foregoing observations made at Lemo Ganula, and Abo.

(Nos. 38 to 59.) **Finland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E., or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
47, 48. Tammela.	Jan.	745	1272	1372	1448	921	2352	996	895	...	S. 0°09′ E.	.12½	N. 67½° E.	.14	434
	Feb.	791	765	1131	1565	1522	2409	1078	739	...	S. 11 58 W.	.25½	S. 54 E.	.10	395
	March	721	704	1085	1127	1549	2784	1243	787	...	S. 28 40 W.	.29	S. 3½ W.	.07½	434
	April	1139	850	964	1385	1832	1981	1051	798	...	S. 13 53 W.	.19½	S. 83 E.	.08	420
	May	1255	1103	1157	747	1210	2091	1156	1281	...	S. 75 36 W.	.43	N. 77 W.	.29½	434
	June	1319	843	549	870	1181	1804	1529	1905	...	S. 85 27 W.	.24	N. 29½ W.	.22½	420
	July	917	908	757	1095	1158	2458	1478	1229	...	S. 56 59 W.	.23	N. 49½ W.	.08	434
	August	1161	545	472	925	1597	2668	1089	1543	...	S. 59 35 W.	.29½	N. 76½ W.	.13	434
	Sept.	1363	555	582	1272	1973	2482	918	855	...	S. 31 46 W.	.26½	S. 11 W.	.05	420
	Oct.	621	523	540	1251	2069	2862	1284	850	...	S. 31 59 W.	.40	S. 27 W.	.18	434
	Nov.	944	719	1013	1593	1359	2684	883	805	...	S. 16 34 W.	.24½	S. 46½ E.	.10	420
	Dec.	607	544	1044	1347	1624	2756	1017	1061	...	S. 25 37 W.	.31	S. 2½ W.	.10	434
	Spring	1038	886	1069	1086	1530	2285	1150	955	...	S. 31 47 W.	.18½	S. 57½ W.	.04	1288
	Summer	1132	765	593	963	1312	2310	1365	1559	...	S. 69 36 W.	.24	N. 45½ W.	.13½	1288
	Autumn	976	599	712	1372	1800	2676	1028	837	...	S. 27 45 W.	.30	S. 6½ W.	.09	1274
	Winter	714	860	1182	1453	1356	2506	1030	898	...	S. 15 39 W.	.22½	S. 60 E.	.08	1263
	The year	965	777	889	1219	1500	2444	1144	1062	...	S. 35 55 W.	.22½	......	...	5113
49. Helsingfors, 1829 to 1841.[1]	Jan.	1832	1401	812	458	1584	2107	916	890	...	N. 86 35 W.	.09	N. 9½ E.	.14½	372
	Feb.	1111	1153	563	830	2082	2503	1083	675	...	S. 33 49 W.	.24½	S. 19 W.	.07	339
	March	1312	1432	1192	884	1673	2008	669	830	...	S. 10 48 E.	.08	N. 64½ E.	.14½	372
	April	1046	1547	1767	1090	957	2076	530	987	...	S. 69 04 E.	.10	N. 63½ E.	.23	360
	May	1362	1009	1009	1085	1412	2345	694	1084	...	S. 32 18 W.	.12	N. 51 E.	.06½	372
	June	1170	336	593	945	1635	2965	1090	1266	...	S. 50 56 W.	.33	S. 64½ W.	.16	360
	July	1292	646	529	720	2467	2540	734	1072	...	S. 37 10 W.	.29½	S. 33 W.	.11½	372
	August	1134	467	573	1040	2013	2080	973	1720	...	S. 52 43 W.	.25½	S. 81 W.	.09	372
	Sept.	1345	697	1264	1151	1864	1832	794	1053	...	S. 10 43 W.	.14	N. 2 E.	.09	360
	Oct.	1170	593	419	1156	1590	2977	1026	1069	...	S. 45 50 W.	.31	S. 48 W.	.13	372
	Nov.	1432	844	192	831	2264	2404	1151	882	...	S. 47 51 W.	.28½	S. 62 W.	.11	360
	Dec.	1486	1191	482	602	2731	1888	683	937	...	S. 31 48 W.	.17½	S. 65½ E.	.02	372
	Spring	1240	1329	1323	1020	1347	2143	631	967	...	S. 11 52 E.	.07½	N. 63½ E.	.14½	1104
	Summer	1199	483	565	902	2038	2528	932	1353	...	S. 47 21 W.	.29	S. 60 W.	.11½	1104
	Autumn	1316	711	625	1046	1906	2404	990	1001	...	S. 40 05 W.	.24	S. 43 W.	.06	1092
	Winter	1476	1248	619	630	2132	2166	894	834	...	S. 42 40 W.	.16	N. 10½ E.	.02½	1083
	The year	1308	943	783	899	1856	2310	862	1039	...	S. 39 00 W.	.18	......	...	4383
50. Helsingfors Dec. 1852–Nov. 1853 inclusive.[2]	Spring	15.0	...	469.2	...	......	...	......	...	...	N. 88 12 E.	.08	N. 53½ E.	.23½	92
	Summer	...	...	...	...	1280.3	...	1967.7	...	...	S. 56 57 W.	.39	S. 71 W.	.22½	92
	Autumn	...	...	...	...	743.8	...	1108.4	...	...	S. 56 8 W.	.22	S. 80 W.	.07½	91
	Winter	...	...	930.1	...	1079.0	...	......	...	...	S. 40 46 E.	.24	S. 81 E.	.27½	90
	The year	...	...	...	...	3088.3	...	1676.8	...	...	S. 38 55 W.	.18	......	...	365
51. The two preceding combined.	Spring	...	...	...	...	......	...	......	...	...	S. 17 7 E.	.07	N. 59½ E.	.15	1196
	Summer	...	...	...	...	......	...	......	...	...	S. 48 19 W.	.30	S. 60 W.	.12½	1196
	Autumn	...	...	...	...	......	...	......	...	...	S. 41 14 W.	.23½	S. 54 W.	.05½	1183
	Winter	...	...	...	...	......	...	......	...	...	S. 35 37 W.	.15	N. 3 E.	.05	1173
	The year	...	...	...	...	......	...	......	...	...	S. 37 58 W.	.18	......	...	4748
52. Sweaborg.	Spring	23	44	36	27	22	39	21	19	44	S. 87 9 E.	.09	N. 68½ E.	.21½	92
	Summer	23	19	22	15	21	78	49	14	35	S. 59 23 W.	.28	S. 65 W.	.14	92
	Autumn	22	24	17	15	50	54	44	33	14	S. 59 0 W.	.26	S. 65½ W.	.12	91
	Winter	16	43	24	21	33	76	22	14	21	S. 19 48 W.	.18	S. 32 E.	.10	90
	The year	84	130	99	78	126	247	136	80	114	S. 53 58 W.	.19	......	...	365
53. Hogland Lighthouse.	Spring	17	32	25	27	17	51	60	11	36	S. 56 19 W.	.16	N. 12½ W.	.05	
	Summer	13	33	38	58	12	37	48	21	16	S. 25 28 E.	.11	N. 77 E.	.17	
	Autumn	25	14	10	41	42	55	44	37	3	S. 50 57 W.	.29	S. 67 W.	.12	
	Winter	20	20	15	45	24	69	37	31	9	S. 43 55 W.	.25	S. 53 W.	.07	
	The year	75	99	88	171	95	212	189	100	64	S. 41 15 W.	.18			
54. Southern Finland.[3]	Spring	...	...	...	...	......	...	......	...	...	S. 39 0 W.	.09	N. 52 E.	.10	
	Summer	...	...	...	...	......	...	......	...	...	S. 58 15 W.	.21½	N. 68 W.	.05	
	Autumn	...	...	...	...	......	...	......	...	...	S. 45 30 W.	.26	S. 44 W.	.08	
	Winter	...	...	...	...	......	...	......	...	...	S. 35 30 W.	.18½	S. 45 E.	.03½	
	The year	...	...	...	...	......	...	......	...	...	S. 52 30 W.	.19			

[1] Transcribed (except the three right hand columns) from Wesselowski, who quotes, etc., as at Aland Islands, No. 37.

[2] These observations, which were made at intervals of 20 minutes, or 72 times per day, were published only as reduced in the directions of the four cardinal points, and the ratios of the resultants, being here computed from these reduced values, are therefore probably somewhat too large.

[3] Computed from the resultants at Galiko, Tammela, Helsingfors, Sweaborg, and Hogland Lighthouse, by plotting.

(Nos. 38 to 59.) **Finland.—*Continued.***

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
55. Virdois.[1]	January	1258	881	1069	2044	2358	912	503	975	...	S. 34°41′ E.	.23	S. 67° E.	.09½	217
	February	1153	214	536	2118	2386	1716	1019	858	...	S. 11 36 W.	.32½	S. 50½ E.	.18	198
	March	1467	406	316	2325	2754	813	1084	835	...	S. 0 03 W.	.26	S. 21 W.	.11	217
	April	1651	711	1491	1583	2867	252	1032	413	...	S. 43 09 E.	.23½	S. 80½ E.	.12	210
	May	3046	432	1244	1523	1878	482	1116	279	...	N. 75 25 E.	.10	N. 53 W.	.19	217
	June	2849	741	1054	883	2194	570	1225	484	...	N. 25 10 E.	.05½	N. 31½ W.	.12	210
	July	1651	572	825	1492	2413	857	1492	998	...	S. 11 34 W.	.15½	N. 87 W.	.07	217
	August	2243	748	1215	1090	1900	841	1091	872	...	N. 59 21 E.	.02½	N. 23½ W.	.15½	217
	September	1724	424	875	1990	2096	292	1406	1193	...	S. 8 30 E.	.08½	N. 21 W.	.07½	210
	October	1479	251	501	1328	2807	676	1830	1128	...	S. 47 20 W.	.28	S. 82 W.	.25	217
	November	1553	116	558	1869	2937	1068	583	316	...	S. 24 20 E.	.27	S. 36½ E.	...	210
	December	1134	309	876	2294	2964	1134	1005	284	...	S. 10 28 E.	.39	S. 7½ E.	...	217
	Spring	2055	516	1017	1810	2500	516	1077	509	...	S. 32 07 E.	.16	N. 67½ E.	.05	644
	Summer	2248	687	1031	1155	2169	756	1269	685	...	S. 8 09 E.	.03	N. 16½ W.	.13	644
	Autumn	1585	597	645	1729	2613	679	1273	879	...	S. 2 04 W.	.17	S. 19 W.	.05	637
	Winter	1182	468	827	2152	2569	1254	842	706	...	S. 7 17 E.	.30	S. 2 W.	.15	632
	The year	1767	567	880	1712	2463	801	1115	695	...	S. 11 16 E.	.16	......	...	2557
56. Laukas.[1]	January	1723	954	738	940	1415	2200	815	1215	...	S. 71 49 W.	.10	N. 41½ W.	.06½	248
	February	1280	744	917	1132	2215	2249	536	917	...	S. 13 39 W.	.22	S. 01 E.	.13½	226
	March	1252	594	595	1127	2598	2144	657	1033	...	S. 23 30 W.	.27½	S. 17½ W.	.18	248
	April	1731	1410	1087	1146	1601	1057	911	1057	...	N. 57 03 E.	.06	N. 04 E.	.04½	240
	May	1844	1009	929	1009	1575	1198	807	1629	...	N. 38 06 W.	.07	N. 76½ E.	.10	248
	June	1940	1642	763	547	1393	1227	713	1775	...	N. 17 04 W.	.18	S. 48 E.	.14	240
	July	1437	2278	1422	749	1392	1162	489	1071	...	N. 54 37 E.	.18½	S. 72 W.	.10	248
	August	1444	1025	594	1093	1201	1728	810	2105	...	N. 72 06 W.	.15	N. 82½ E.	.20	248
	September	1057	709	793	1127	2156	2336	862	960	...	S. 24 56 W.	.26	S. 20 W.	.17	240
	October	927	645	605	1290	2446	2406	659	1022	...	S. 20 36 W.	.31½	S. 15 W.	.22½	248
	November	1570	806	523	1669	1782	1938	538	1174	...	S. 18 52 W.	.14½	S. 04½ E.	.06	240
	December	1038	889	755	1456	1833	2143	916	970	...	S. 19 10 W.	.21½	S. 07½ W.	.12½	248
	Spring	1609	1004	870	1094	1925	1466	792	1240	...	S. 32 24 W.	.06½	N. 38½ E.	.03	736
	Summer	1607	1648	926	796	1329	1372	671	1650	...	N. 7 58 W.	.13	S. 54½ E.	.09	736
	Autumn	1185	720	640	1362	2128	2227	686	1052	...	S. 21 45 W.	.24	S. 17½ W.	.15	728
	Winter	1347	862	803	1179	1821	2197	756	1034	...	S. 27 30 W.	.17	S. 18 W.	.08	722
	The year	1437	1059	810	1108	1800	1815	726	1244	...	S. 34 09 W.	.09½	......	...	2922
57. Kalaioki.[1]	January	1545	1021	874	1358	3360	1129	484	229	...	S. 22 27 E.	.29	S. 19½ E.	.14½	279
	February	1347	454	1431	859	3687	1296	741	185	...	S. 9 30 E.	.34½	S. 2 W.	.21	254
	March	1705	461	1336	830	3210	1367	722	369	...	S. 6 54 E.	.25	S. 15½ W.	.12	279
	April	2389	1347	1222	931	1722	1458	653	278	...	N. 82 25 E.	.09½	N. 11½ E.	.15	270
	May	2702	1344	833	551	1357	1694	941	578	...	N. 18 32 W.	.12	N. 56½ W.	.03	279
	June	2958	1236	1042	527	1389	1097	903	848	...	N. 3 06 E.	.19	S. 51 W.	.09½	270
	July	2836	1116	1989	685	1291	860	726	497	...	N. 37 53 E.	.25½	S. 72½ W.	.23	279
	August	2621	860	1156	470	2097	1089	1183	524	...	N. 29 34 W.	.04½	N. 25½ W.	.10	279
	September	1549	817	1056	887	2859	1916	578	338	...	S. 2 53 E.	.18	S. 47 W.	.07½	270
	October	901	1142	901	1089	3656	1411	430	470	...	S. 12 00 E.	.34½	S. 2 E.	.20½	279
	November	1267	1031	1420	1184	3273	1114	335	376	...	S. 31 14 E.	.31	S. 36 E.	.16½	270
	December	1078	633	1456	1132	3801	1159	418	323	...	S. 18 39 E.	.39	S. 14 E.	.24½	279
	Spring	2265	1051	1130	771	2096	1506	772	408	...	S. 36 02 E.	.05	N. 21 W.	.09½	828
	Summer	2805	1071	1396	561	1592	1015	937	623	...	N. 19 21 E.	.14	S. 87½ W.	.10½	828
	Autumn	1239	997	1126	1053	3263	1480	448	395	...	S. 15 50 E.	.29½	S. 6½ E.	.15½	819
	Winter	1323	703	1254	1116	3616	1195	548	246	...	S. 16 39 E.	.34	S. 9½ E.	.20	812
	The year	1908	955	1226	872	2642	1299	676	418	...	S. 25 55 E.	.14½	......	...	3287
58. Uleaborg.	January	1284	1157	1450	1819	2004	1070	720	496	...	S. 47 18 E.	.23½	S. 73½ E.	.24½	744
	February	1110	1006	1355	2413	1794	1290	593	439	...	S. 40 37 E.	.30	S. 55½ E.	.19½	678
	March	1468	825	1318	1398	2324	1036	745	886	...	S. 39 53 E.	.16	S. 83½ E.	.07	744
	April	1611	1185	1052	1202	2012	1068	910	960	...	S. 39 22 E.	.06½	N. 8 E.	.06½	720
	May	1626	859	1357	844	1043	1273	1840	1158	...	N. 62 49 W.	.11	N. 37½ W.	.21	744
	June	1410	924	1094	600	1175	1475	2050	1272	...	N. 80 04 W.	.18½	N. 55¼ W.	.26	720
	July	1300	1309	1464	918	1382	1345	1391	891	...	S. 27 46 E.	.01½	N. 13¼ W.	.10½	744
	August	1539	748	1139	1017	1731	1539	1322	965	...	S. 41 50 W.	.10½	N. 70½ W.	.10¾	744
	September	1374	637	862	1104	2531	1885	871	736	...	S. 15 21 W.	.24	S. 38¾ W.	.15	720
	October	1544	728	1249	1091	2478	1671	728	511	...	S. 7 29 E.	.20	S. 3¼ W.	.08	744
	November	1254	1091	1274	1325	2935	1173	530	418	...	S. 27 18 E.	.27	S. 35¾ E.	.15	720
	December	1400	1116	1257	1653	2282	1116	466	710	...	S. 43 16 E.	.21	S. 71 E.	.11½	744
	Spring	1568	956	1242	1148	1793	1126	1165	1001	...	S. 82 20 E.	.34	N. 66 W.	.40	2208
	Summer	1416	994	1232	845	1429	1453	1588	1043	...	S. 76 27 W.	.08½	N. 53½ W.	.15½	2208
	Autumn	1391	819	1128	1173	2648	1576	710	555	...	S. 8 08 E.	.22½	S. 0¾ W.	.11	2184
	Winter	1265	1093	1354	1962	2027	1159	593	548	...	S. 43 28 E.	.25	S. 64 E.	.15½	2166
	The year	1410	965	1239	1282	1974	1329	1014	787	...	S. 15 10 E.	.12	......	...	8766

[1] Transcribed (except the three right hand columns) from Wesselowski, who quotes as at Aland Islands, No. 37.

(Nos. 38 to 59.) **Finland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
59. Kajam and Paldamo	January	602	731	989	2237	2366	1226	1376	473	...	S. 8°38′ E.	.34	S. 64° E.	.18½	217
	February	638	378	402	2151	3026	946	1206	1253	...	S. 16 51 W.	.35½	S. 8½ E.	.08½	198
	March	581	667	602	1957	2817	1441	1032	903	...	S. 3 45 W.	.35½	S. 43 E.	.13½	217
	April	1067	444	1178	1089	2933	933	1689	667	...	S. 12 33 W.	.26	N. 99 E.	.06	210
	May	1223	794	1309	687	1287	923	2575	1202	...	N. 83 03 W.	.17½	N. 12 W.	.28	217
	June	956	333	1000	733	2022	1156	2778	1022	...	S. 60 37 W.	.29½	N. 52 W.	.17½	210
	July	591	269	941	1156	1909	1183	2500	1451	...	S. 53 58 W.	.30	N. 58½ W.	.15	217
	August	645	538	932	574	3082	1111	2330	788	...	S. 36 00 W.	.33	S. 82 W.	.08	217
	September	711	578	1222	689	3044	1178	2022	556	...	S. 23 06 W.	.31	S. 10½ W.	.03	210
	October	599	1030	936	730	3184	1124	1592	805	...	S. 18 06 W.	.25	N. 61½ E.	.04	217
	November	305	933	1162	1056	2781	1467	1219	1067	...	S. 8 40 W.	.29	S. 65½ E.	.08	210
	December	215	323	882	1247	2365	2108	1556	1204	...	S. 30 14 W.	.40	S. 42½ W.	.12½	217
	Spring	957	635	1030	1244	2346	1099	1765	924	...	S. 23 17 W.	.21	N. 27½ E.	.07	644
	Summer	731	380	958	821	2338	1150	2536	1087	...	S. 49 39 W.	.30½	N. 64 W.	.13	644
	Autumn	538	847	1107	828	3003	1256	1611	809	...	S. 15 45 W.	.29	S. 57½ E.	.04½	637
	Winter	485	477	758	1878	2586	1427	1413	977	...	S. 11 27 W.	.35	S. 27 E.	.10½	632
	The year	678	585	963	1193	2568	1233	1831	949	...	S. 24 35 W.	.28	......	...	2557

(Nos. 60 to 64 (*b*).) **Northern Russia.**

Observed at the following places, viz.:—

Archangel, for a period of 18½ years, from about the 18th of June, 1813, to the end of 1831.

Beresov, 3 years, 1870 to 1872, by Soldatkow and N. Koschewnikow.

Kem, by Kosloff during the years 1866, 1867, 1868 and 1871.

Petrozavodsk, during the years 1840, 1841, 1844 and 1845, and published in the Siberian Times, whence they were copied, and the computations made by Wesselowski.

Ustsysolsk, District of Wologda, 8 years, 1855 to 1862, by Dr. Drschewezki.

Yarensk, by Petropopow, for 11 years, 1836 to 1848.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
60. Petrozavodsk	The year	896	1013	1647	944	1785	1006	1799	910	...	S. 7° 44′ W.	.09	......	...	1462
61. Kem, 1866	January	3	2	0	10	1	38	13	23	3					
	February	11	16	0	8	18	7	11	6	7					
	March	5	12	1	3	24	21	15	3	9					
	April	20	16	2	6	3	10	10	19	4					
	May	8	33	10	13	10	7	1	2	6					
	June	10	12	13	9	14	14	15	3	0					
	July	23	25	11	10	16	6	1	1	0					
	August	4	22	32	7	6	14	8	0	0					
	September	15	0	18	6	35	12	4	0	0					
	October	4	2	1	7	16	26	17	16	4					
	November	2	5	5	31	21	12	4	10	0					
	December	8	20	0	6	6	24	1	26	2					
	Spring	33	61	13	22	37	38	26	24	19	N. 5 59 E.	.06½	N. 10° E.	.13	
	Summer	37	59	56	26	36	34	24	4	0	N. 87 16 E.	.24	N. 72½ E.	.27	
	Autumn	21	7	24	44	72	50	25	26	4	S. 11 13 W.	.35	S. 10 W.	.28	
	Winter	22	38	0	24	25	69	25	55	12	S. 87 30 W.	.25½	N. 76 W.	.25	
	The year	113	165	93	116	170	191	100	109	35	S. 14 16 W.	.07½			

(Nos. 60 to 64 (*b*).) **Northern Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
61(*a*). Kem, years, 1866–68 and 1871.	January	17	15	12	16	61	102	63	41	45					
	February	44	27	7	19	88	29	55	21	49					
	March	23	25	11	16	102	86	53	18	38					
	April	52	33	30	25	56	40	51	45	29					
	May	59	91	45	33	52	21	21	21	26					
	June	38	63	57	38	43	41	36	22	23					
	July	45	56	71	43	43	22	35	10	13					
	August	45	47	56	25	63	44	66	11	13					
	September	70	17	53	17	98	43	45	7	10					
	October	17	4	22	22	97	76	82	34	17					
	November	31	22	22	40	60	66	59	45	25					
	December	49	36	14	39	48	81	26	51	25					
	Spring	134	149	86	74	210	147	125	84	93	S. 33° 29′ W.	.08			
	Summer	128	166	184	106	149	107	137	43	49	S. 79 52 E.	.14			
	Autumn	118	43	97	79	255	185	186	86	52	S. 39 56 W.	.28			
	Winter	110	76	33	74	197	212	144	113	119	S. 56 28 W.	.29			
	The year	490	434	400	333	811	631	592	326	313	S. 35 03 W.	.14			
62. White Sea	Computed from observations made by the French Commission for 10 days in the summer of 1840, as follows:— N.E. 5, E.N.E. 4, S.E. 1, S.S.E. 4, South 7, S.W. 1, W.N.W. 1, N.N.W. 1; calm or variable, 9. Direction of resultant, S. 51° 37′ E. Ratio of resultant to sum of winds, 28.														
63. Archangel.[1] Old style.	January	53	44	107	192	114	240	202	49	...	S 23° 53′ W.	.32½	S. 15 W.	.24½	558
	February	58	48	109	201	139	192	199	55	...	S. 17 20 W.	.30	S. 5½ W.	.22½	508
	March	85	40	87	160	166	174	169	120	...	S. 36 05 W.	.25	S. 22 W.	.16	558
	April	146	82	146	139	86	105	134	162	...	N 18 37 W.	.06½	N. 21 E.	.13	540
	May	214	108	152	121	61	59	92	193	...	N. 10 28 E.	.24	N. 21 E.	.31½	558
	June	217	148	138	129	56	44	67	201	...	N. 18 12 E.	.30	N. 25½ E.	.38	540
	July	195	117	159	181	60	78	66	144	...	N. 47 00 E.	.21	N. 48 E.	.30	558
	August	135	99	128	118	87	105	213	117	...	N. 64 02 W.	.10	N. 13 W.	.10½	558
	September	178	75	114	116	109	161	141	105	...	N. 89 12 W.	.08	N. 11 W.	.06	540
	October	115	66	100	119	136	185	198	81	...	S. 49 45 W.	.20	S. 51½ W.	.11	558
	November	59	39	104	164	144	237	212	42	...	S. 27 33 W.	.35	S. 21 W.	.26½	540
	December	68	55	106	161	121	206	239	44	...	S. 33 06 W.	.29	S. 27 W.	.20½	558
	Spring	148	77	128	140	104	113	132	158	...	N. 53 05 W.	.05	N. 15½ E.	.09½	1656
	Summer	182	121	142	143	68	76	115	154	...	N. 18 21 E.	.16	N. 29½ E.	.24½	1656
	Autumn	117	60	106	133	130	194	184	76	...	S. 41 55 W.	.20	S. 36 W.	.11½	1638
	Winter	60	49	107	185	125	213	213	49	...	S. 24 33 W.	.30	S. 15 W.	.22	1624
	The year	127	77	121	150	107	149	161	109	...	S. 46 14 W.	.08½	......	...	6574
New style.	January	508	468	1219	2063	1279	2248	1700	514	...	S. 11 39 W.	.32	......	...	558
	February	757	473	1078	1770	1391	1763	1945	823	...	S. 26 36 W.	.25	......	...	508
	March	1036	498	995	1534	1350	1411	1656	1520	...	S. 48 13 W.	.14½	......	...	558
	April	1784	1020	1568	1277	682	928	1054	1689	...	N. 11 02 E.	.15	......	...	540
	May	2158	1115	1551	1280	621	469	852	1954	...	N. 15 23 E.	.25½	......	...	558
	June	1950	1655	1672	1192	562	541	623	1805	...	N. 28 16 E.	.29½	......	...	553
	July	1996	1048	1225	1627	791	1014	791	1508	...	N. 25 20 E.	.13	......	...	589
	August	1783	1111	1427	1273	995	1163	995	1253	...	N. 39 03 E.	.08½	......	...	589
	September	1397	620	971	1153	1226	1832	1872	929	...	S. 62 11 W.	.18	......	...	570
	October	989	520	1143	1503	1503	1882	1856	604	...	S. 18 01 W.	.22	......	...	589
	November	697	474	1016	1307	1191	2336	2491	488	...	S. 42 48 W.	.32½	......	...	570
	December	521	454	1095	1636	1168	2096	2616	414	...	S. 34 14 W.	.32	......	...	589
	Spring	1659	878	1371	1364	884	935	1187	1721	...	N. 6 08 W.	.10	......	...	1656
	Summer	1910	1271	1441	1364	783	906	803	1522	...	N. 27 40 E.	.17	......	...	1731
	Autumn	1028	538	1043	1321	1307	2017	2073	674	...	S. 42 23 W.	.24	......	...	1729
	Winter	595	465	1131	1823	1279	2036	2087	584	...	S. 24 09 W.	.29	......	...	1655
	The year	1298	788	1247	1468	1063	1473	1538	1125	...	S. 47 35 W.	.07	......	...	6771
Coffin's res'lt	The year	2350	1426	2239	2760	1969	2757	3007	2023	1784	S. 47 42 W.	.09	......	...	6771

[1] The work of Wesselowski contains two series of results for this place, from substantially the same data. The observations for the first, which were recorded in *old style* for a period of 18 years from 1814 to 1831, inclusive, he quotes from the Memoirs of the Imperial Academy of Science of St. Petersburgh. The second is computed from the same series, changed into *new style*, with the observations for the latter half of 1813 added. As the results of the two series differ somewhat, both are here given; and also another line is added giving the results for the entire latter period, computed by the author from the original observations, and published in his former work on the Winds of the Northern Hemisphere.

(Nos. 60 to 64 (*b*).) **Northern Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
64. Yarensk.[1]	The year	1995	365	601	635	2059	1862	1208	1275		S. 72° 29′ W.	.22	......	...	4018
64 (*a*). Ustsysolsk.	1855	41	50	14	15	22	120	39	59	...	N. 89° W.[2]	.29			
	1856	45	69	25	11	31	84	33	68	...	N. 53 W.[2]	.20			
	1857	61	69	24	8	22	83	41	57	...	N. 44 W.[2]	.24			
	1858	55	51	21	10	40	92	40	56	...	N. 77 W.[2]	.23			
	1859	42	60	11	10	14	98	40	87	...	N. 64 W.[2]	.34			
	1860	38	51	20	17	28	121	45	44	...	S. 78 W.[2]	.26			
	1861	54	54	12	14	21	100	39	70	...	N. 68 W.[2]	.29			
	1862	25	60	20	9	72	104	9	67	...	S. 59 W.[2]	.20			
	Mean	45.12	58.00	18.37	11.75	31.25	100.25	35.75	63.50	...	N. 76 W.[2]	.24			
64 (*b*). Beresov.	January	26	0	0	0	6	3	5	12	24					
	February	24	0	1	1	13	4	16	7	19					
	March	7	1	1	1	20	11	17	2	35					
	April	12	2	2	3	17	8	6	6	31					
	May	16	15	4	3	9	3	8	4	19					
	June	31	8	7	2	6	1	5	7	17					
	July	11	3	2	2	12	3	8	8	13					
	August	17	3	5	3	8	2	11	10	7					
	September	16	4	2	0	2	2	11	17	21					
	October	7	0	5	1	11	10	9	8	11					
	November	5	1	1	0	8	5	14	7	19					
	December	3	2	0	3	14	7	3	3	0					
	Spring	35	18	7	7	46	22	31	12	85	S. 70 4 W.	.12	S. 22° E.	.17	
	Summer	59	14	14	7	26	6	24	25	37	N. 18 22 W.	.27	N. 34 E.	.17	
	Autumn	28	5	8	1	21	17	34	32	51	N. 70 0 W.	.31	S. 85 W.	.11	
	Winter	53	2	1	4	33	14	24	22	43	N. 57 23 W.	.27	N. 57 W.	.05	
	The year	175	39	30	19	126	59	113	91	216	N. 57 0 W.	.21			

[1] Transcribed from Wesselowski. See No. 37. [2] Computed by plotting.

(Nos. 65 to 71.) **Siberia.**

Observed at the following places, viz.:—

Amginsk, by Waldemar von Middendorf from May 21st to 30th, 1845, and from March 20th to April 3d, 1846.

Anadyr River (mouth of), by Dr. George Kennan in the years 1866 and 1867.

Bache Aktolik, by Waldemar von Middendorf from April 13th to August 12th, 1844.

Ghijiga, by Dr. George Kennan in the years 1865, 1866 and 1867.

Penjinsk Gulf, by Dr. George Kennan as at Ghijiga.

Yacoutsk, during the years 1830 to 1844 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
65, 66. Bache Aktolik.	Spring	7	0	14	0	12	2	53	5	48	S. 86° 15′ W.	.31			
	Summer	3	0	26	1	9	0	45	0	58	S. 69 51 W.	.14			
67. Amginsk.	Spring	17	25	41	21	21	9	25	17	...	N. 81 32 E.	.17			

(Nos. 65 to 71.) **Siberia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
68. Yacoutsk.[1]	January	6494	487	168	184	1158	218	487	805	...	N. 5° 25′ W.	.60	North	.34½	465
	February	4861	655	397	357	1786	179	1052	714	...	N. 8 53 W.	.37	N. 1° W.	.12	424
	March	3471	541	382	223	2420	255	1640	1067	...	N. 41 50 W.	.25	S. 63½ W.	.12½	465
	April	3288	677	528	474	1678	352	1799	1204	...	N. 33 30 W.	.28	S. 83½ W.	.10	450
	May	2593	692	1308	582	1659	440	1736	989	...	N. 21 2 W.	.15	S. 0½ E.	.10½	465
	June	1518	590	2296	866	1920	310	1706	803	...	S. 73 45 E.	.09	S. 27 E.	.30½	450
	July	1691	616	1739	845	2415	423	1582	688	...	S. 29 52 E.	.08	S. 16½ E.	.33	465
	August	2098	757	2085	571	1554	345	1700	890	...	N. 23 5 E.	.11½	S. 35¼ E.	.17½	465
	September	2621	623	1515	538	1658	368	1757	920	...	N. 13 13 W.	.14½	S. 12 E.	.10½	450
	October	3123	430	688	458	1633	444	2135	1039	...	N. 44 39 W.	.27	S. 29 E.	.50	465
	November	5986	593	454	192	942	297	873	663	...	N. 5 32 W.	.56	N. 0½ E.	.31	450
	December	6198	580	290	137	1038	275	840	641	...	N. 6 52 W.	.57½	N. 3 W.	.32½	465
	Spring	3117	637	739	426	1919	349	1725	1087	...	N. 32 49 W.	.22½	S. 50½ W.	.09	1380
	Summer	1769	654	2040	761	1963	356	1663	794	...	N. 86 10 E.	.05½	S. 24¼ E.	.27	1380
	Autumn	3910	549	886	396	1411	370	1588	891	...	N. 17 16 W.	.31	N. 36¼ W.	.06	1365
	Winter	5851	574	285	226	1327	224	793	720	...	N. 6 47 W.	.51½	N. 2¾ W.	.26	1354
	The year	3662	603	988	452	1655	325	1442	873	...	N. 12 31 W.	.25½	......	...	5479

69. Ghijiga.
70. Penjinsk Gulf.
71. Anadyr River.

Dr. Kennan who, as Quartermaster and Secretary of the Russian Division of the Expedition for constructing the Russo-American Overland Telegraph, sailed from San Francisco July 3d, 1865, and was traversing the region between Okotsk and Behring Strait most of the time till September 28th, 1867, writes as follows: "At both Ghijiga, the head of the Penjinsk Gulf, and the mouth of the Anadyr River, the wind blows in winter with almost the regularity of the 'trades'; in the two former places from N. E. to S. W., and in the latter from N. and N. W. to S. and S. E. At Ghijiga, between October 1st and March 1st, the wind blows at least six days out of eight from the N.E., and northerly and northeasterly winds prevail throughout the winter on the whole coast. In summer the regularity is not so marked, but the prevailing winds are from the south."[2]

[1] With the exception of the last four columns, this table is transcribed from the work of Wesselowski, in which no account is taken of calms. If we assume their relative number for the several months to have been the same as in the year September, 1837, to August, 1838, inclusive, given in the author's former work, the numbers in the thirteenth column will be modified so as to read as follows, viz., January 55, February 32, March 19½, April 26, May 15, June 08½, July 07½, August 11, September 10½, October 25, November 54½, December 56, Spring 20, Summer 05½, Autumn 29, Winter 47½, the year 24.

[2] Dr. Kennan ascribes the monsoon character of the winds "to the influence of the Okotsk Sea, whose open waters are warmer than the land in the winter, and colder in the summer." He remarks that "the best point probably for observation of the wind is Anadyrsk (lat. 65° 30′, long. 166° 45′) as it is less influenced there by local peculiarities, such as the trend of the sea-coast, and the position of mountains and water, than it is in any other of the Siberian settlements with which I (he) am acquainted." It is much to be regretted that the series of observations made there by a member of the party, for several months, appears to be lost.

ZONE No. 7.

Latitude 55° to 60° North.

The data for the study of the winds of this zone consist of observations made at 188 different places on land for an aggregate period of over 1082 years, and for 5218 days, or over 14 years, at sea, distributed as follows:—

Where observed.	No. of stations.	Aggregate length of time.
Pacific Ocean	...	4787 days, over 13 years.
America	10	Nearly 33 years.
Atlantic Ocean	...	431 days, over 1 year.
British Isles	103	Over 400 years.
Norway, Sweden and Denmark	34	Over 310 years.
European Russia	30	Over 257 years.
Siberia	12	Over 83 years.

(Nos. 1 to 9.) **Pacific Ocean.** Longitude 170° E.

From observations for an aggregate period of over 13 years, collected and classified from the logs of numerous sailing vessels, chiefly at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of Resultant.	Ratio of Resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
1. Long. 170° E. to 165° W.	Summer[1]	0	0	4	4	13	3	15	0	1	4	12	0	5	0	0	0	9	S. 40° 45′ E.	.38	14
2. Long. 160° to 170° W.	Autumn[2]	1	1	2	0	0	0	2	0	1	0	1	0	0	0	0	0	1	N. 58 44 E.	.32	9
3. Long. 155° to 165° W.	Summer	6	9	12	9	0	9	0	7	6	13	13	4	3	8	6	5	8	S. 81 13 W.	.27	39
4. Long. 150° to 155° W.	Spring	2	23	4	22	9	23	27	43	8	72	17	93	20	44	2	43	5	S. 50 5 W.	.30	152
	Summer	9	67	38	102	34	191	50	205	83	245	109	370	186	429	57	150	76	S. 63 57 W.	.29	800
5. Long. 145° to 150° W.	Spring	11	32	11	111	37	116	52	145	16	85	52	80	27	58	11	44	30	S. 27 9 E.	.26	306
	Summer	58	191	71	220	75	383	207	352	113	397	304	585	214	442	105	316	261	S. 41 43 W.	.23	1398
6. Long. 130° to 165° W.	Autumn	1	9	0	1	1	11	11	4	1	19	0	18	6	16	3	0	0	S. 43 27 W.	.31	34
7. Long. 140° to 145° W.	Summer	104	197	39	234	138	274	170	358	177	449	224	511	213	338	133	173	132	S. 36 2 W.	.23	1288
8. Long. 135° to 145° W.	Spring	13	22	2	28	14	87	32	84	29	46	18	59	9	123	21	56	26	S. 35 57 W.	.15	223
9. Long. 130° to 140° W.	Summer	19	62	3	75	15	82	48	221	53	142	62	125	76	195	153	166	75	S. 73 9 W.	.22	524

[1] Observed by Rogers in 1855. [2] Observed by Beechy in 1826 and 1827.

(No. 9(*a*).) **Island of St. Paul, Alaska.** See Addendum, at the end of Zone 36.

(Nos. 10 to 12.) **Southern Alaska.**

Observed at the following places, viz.:—

Fort Kodiak, by U. S. Army Surgeons, during the last nine months of the year 1869.

Fort Wrangel, by U. S. Army Surgeons, for an aggregate period of 13 months in the years 1868 and 1869.

New Archangel, on the island of Sitka, by Benjamin and Cigneus, 10 years, from the year 1833 to 1842, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
10. Fort Kodiak.	Spring	15	38	39	29	14	20	12	16	...	N. 84° 42′ E.	.27	S. 83½° E.	.21
	Summer	24	35	39	46	34	53	17	18	...	N. 34 21 E.	.19½	N. 24½ E.	.12
	Autumn	54	18	35	33	45	24	31	33	...	N. 2 51 E.	.02	S. 64½ W.	.06½
	December	8	5	10	16	6	13	15	20	...	S. 86 29 W.	.14½	S. 74 W.	.21
	The year[1]	...	...	...	...	...	...	...	...	.	N. 50 14 E.	.07½		

[1] Computed from the resultants for the seasons.

(Nos. 10 to 12.) **Southern Alaska.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.
11. Sitka.[1]	January	1433	1737	2682	1520	1031	608	478	510	...	N. 82° 32′ E.	.37½		
	February	984	1767	2088	1696	1376	854	474	759	...	S. 82 00 E.	.29½		
	March	781	1204	2291	1288	1172	1246	887	1130	...	S. 70 20 E.	.16		
	April	559	1130	1398	1622	1074	1588	1107	1521	...	S. 2 35 E.	.09		
	May	690	670	1201	1090	1050	2022	1331	1942	...	S. 67 00 W.	.18		
	June	521	421	898	721	1042	2483	1918	1996	...	S. 72 17 W.	.35½		
	July	546	293	772	652	1758	2637	1771	1571	...	S. 56 03 W.	.39½		
	August	410	542	992	1124	1243	2447	1508	1733	...	S. 52 36 W.	.28½		
	September	465	465	1396	1396	2100	1599	1384	1194	...	S. 13 59 W.	.26½		
	October	485	806	3110	1364	1394	1539	744	558	...	S. 50 39 E.	.31½		
	November	623	818	3197	2390	1021	950	715	286	...	S. 63 03 E.	.43½		
	December	1292	1360	2573	1955	629	764	595	832	...	N. 84 43 E.	.32		
	Spring	677	1001	1630	1333	1099	1619	1108	1531	...	S. 5 56 W.	.07	N. 37½ W.	.06½
	Summer	492	419	887	832	1348	2522	1732	1767	...	S. 60 37 W.	.34	S. 82 W.	.33½
	Autumn	524	696	2568	1717	1505	1363	948	679	...	S. 40 50 E.	.29	S. 57½ E.	.18½
	Winter	1236	1621	2448	1724	1012	742	516	700	...	N. 87 51 E.	.32½	N. 65½ E.	.32
	The year	732	934	1883	1401	1241	1562	1076	1169	...	S. 25 30 E.	.12½		
	8 A. M.	809	1164	2328	1614	1136	1211	832	903	...	S. 66 23 E.	.21½	N. 78½ E.[3]	.17
	Noon	623	867	1796	1311	1237	1640	1233	1291	...	S. 1 46 E.	.12	S. 89 W.[3]	.03
	3 P. M.	591	859	1681	1240	1260	1770	1236	1362	...	S. 12 50 W.	.12½	S. 86 W.[3]	.06
	9 P. M.	1000	912	1965	1567	1266	1456	850	983	...	S. 47 17 E.	.15½	N. 11 E.[3]	.08½
12. Fort Wrangel.	Spring	5	15	55	40	28	5	8	12	2	S. 64 12 E.	.48	S. 62 E.	.29½
	Summer	2	20	9	123	11	24	13	45	159	S. 35 49 E.	.20	S. 30½ W.	.10
	Autumn	33	7	24	11	65	0	4	40	89	S. 34 10 E.	.03	N. 71½ W.	.16
	Winter	16	5	6	10	9	0	0	9	38	N. 46 11 E.	.15	N. 19 W.	.23
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 27 E.	.18		

[1] Transcribed from Wesselowski, except the four right hand columns.
[2] Computed from the resultants for the seasons.
[3] Land and sea breezes.

(Nos. 13 to 16.) **Hudson's Bay Territory.**

Observed at the following places, viz. :—

Fort Chipewayan, on Lake Athabaska, by Capt. Lefroy, from October till June of the succeeding year (dates not preserved).

Fort Prince of Wales, by Wales, in the years 1768 and 1769.

Norway House, by Donald Ross, from 1841 to 1847, inclusive, and communicated to the author.

York Factory, during the years 1843 to 1848, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
13. Fort Chipewayan.	Spring	64	71	5	10	12	27	21	49	94	N. 6° 25′ W.	.31	N. 36° W.	.15	92
	June	19	29	18	0	9	15	5	14	7	N. 23 34 E.	.28	N. 44½ E.	.09	30
	Oct. & Nov.	8	160	37	63	37	40	42	36	537	N. 69 37 E.	.11	S. 18½ E.	.16½	61
	Winter	66	299	126	51	48	51	146	210	803	N. 6 41 E.	.17	S. 50 W.	.04	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 14 24 E.	.20	......	...	273

[1] Computed from the resultants for the seasons.

(Nos. 13 to 16.) **Hudson's Bay Territory.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
14. Norway House.	January	23	25	7	18	31	24	21	46	22	N. 69° 17′ W.	.16	S. 81¾° W.	.11½	217
	February	38	34	6	12	32	16	9	30	20	N. 5 27 W.	.16	N. 13½ E.	.09	197
	March	53	30	6	11	44	14	6	26	27	N. 1 19 E.	.14	N. 30¾ E.	.08	217
	April	30	47	8	12	42	14	3	32	22	N. 29 07 E.	.14	N. 65 E.	.11½	210
	May	31	43	7	10	47	16	3	20	40	N. 57 37 E.	.09	S. 78¾ E.	.11½	217
	June	27	27	6	9	59	19	2	16	45	S. 12 43 E.	.10	S. 19 E.	.18	210
	July	38	16	9	9	57	13	4	32	39	S. 86 7 W.	.04	S. 48 E.	.10½	217
	August	24	13	4	10	48	20	14	49	35	S. 88 9 W.	.20	S. 65 W.	.18	217
	Sept'mber	32	15	4	22	38	11	18	39	31	N. 67 29 W.	.12	S. 71 W.	.07½	210
	October	50	23	13	14	28	9	9	48	23	N. 10 16 W.	.26	N. 3 W.	.18½	217
	November	51	24	13	14	44	7	9	30	18	N. 8 50 E.	.15	N. 37 E.	.10	210
	December	31	25	9	11	50	15	12	36	28	N. 65 01 W.	.07	S. 32½ W.	.05	217
	Spring	114	120	21	33	133	44	12	78	89	N. 24 55 E.	.11	N. 71 E.	.09	644
	Summer	89	56	19	28	164	52	20	97	119	S. 63 32 W.	.08	S. 17½ W.	.11	644
	Autumn	133	62	30	50	110	27	36	117	72	N. 16 45 W.	.16	N. 5½ W.	.08½	637
	Winter	92	84	22	41	113	55	42	112	70	N. 45 00 W.	.11	N. 80 W.	.04	631
	1841	49	55	13	31	61	34	15	53	54	N. 8 22 W.	.05	......	...	365
	1842	58	38	14	17	85	25	11	43	74	N. 84 39 W.	.02	......	...	365
	1843	92	34	9	14	69	24	16	54	53	N. 25 48 W.	.18	......	...	365
	1844	85	37	4	10	66	27	18	93	26	N. 39 21 W.	.32	......	...	366
	1845	43	60	12	31	61	27	14	64	53	N. 3 59 W.	.08	......	...	365
	1846	41	51	11	27	78	29	17	61	50	N. 79 50 W.	.04	......	...	365
	1847	60	47	29	22	100	12	19	36	40	S. 77 51 E.	.07	......	...	365
	Total	428	322	92	152	520	178	110	404	350	N. 27 26 W.	.08	......	...	2556
15. Fort Prince of Wales.	The year	169	78	86	51	83	70	159	359	...	N. 42 39 W.	.40	......	...	730
16. York Factory.	January	6	1	2	1	6	5	2	3	5	......	...	......	...	186
	February	6	1	2	1	4	1	2	4	7	......	...	......	...	170
	March	10	2	1	1	4	2	1	2	8	......	...	......	...	186
	April	6	4	3	1	4	1	1	1	9	......	...	......	...	180
	May	7	6	2	1	3	0	0	2	10	......	...	......	...	186
	June	3	6	4	1	4	0	1	1	10	......	...	......	...	180
	July	3	6	6	1	4	0	0	1	10	......	...	......	...	186
	August	3	5	4	1	3	1	1	1	12	......	...	......	...	186
	September	4	2	2	1	5	0	2	3	11	......	...	......	...	180
	October	6	1	3	1	6	1	2	4	7	......	...	......	...	186
	November	4	1	3	1	8	3	4	3	3	......	...	......	...	180
	December	3	1	4	1	9	4	5	2	2	......	...	......	...	186
	Spring	23	12	6	3	11	3	2	5	27	N. 24 21 E.	.23½	N. 19½ E.	.15½	552
	Summer	9	17	14	3	11	1	2	3	32	N. 68 14 E.	.27	N. 81½ E.	.21	552
	Autumn	14	4	8	3	19	4	8	11	21	N. 83 21 W.	.06	S. 60 W.	.12	546
	Winter	15	3	8	3	19	10	9	9	14	S. 65 12 W.	.12½	S. 53° W.	.20	542
	The year	61	36	36	12	60	18	21	28	94	N. 33 14 E.	.08	......	...	2192

(Nos. 17 and 18.) **Northern Labrador.**

Observed at the following places, viz. :—

Little Whale River, on the shore of Hudson's Bay, by Walter Dickson, for 13 months, in the years 1861 and 1862.

Nain, by Moravian Missionaries, from August, 1842, to June, 1843, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N.& W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
17. Little Whale River	Spring	56	7	18	86	30	6	32	31	10	S. 64° 34′ E.	.10	N. 48° E.	.11½	92
	Summer	77	18	15	27	5	76	25	28	5	N. 58 30 W.	.22	N. 40 W.	.35	92
	Autumn	40	10	26	86	57	10	10	27	7	S. 44 30 E.	.30	S. 25 E.	.39	91
	Winter	10	10	36	66	75	53	64	29	19	S. 14 54 W.	.35	S. 23½ W.	.24	121
	The year[1]	...	...	...	...	...	...	...	...	...	S. 3 20 E.	.12	......	...	396

[1] Computed from the resultants for the seasons.

(Nos. 17 and 18.) **Northern Labrador.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
18. Nain	January	34	1	0	0	0	0	16	11	0	N. 28° 30′ W.	.78	N.28°43′W	.24	31
	February	16	9	0	0	1	1	19	10	0	N. 36 21 W.	.61	N. 81½ W.	.10½	28
	March	37	8	4	0	0	0	4	9	0	N. 0 51 W.	.79	N. 37¾ E.	.40	31
	April	13	9	0	0	0	1	3	33	0	N. 26 46 W.	.76½	N. 23 W.	.22	30
	May	6	21	6	4	1	1	7	17	0	N. 7 40 E.	.48	East	.32	31
	June	8	23	17	0	0	1	5	4	2	N. 43 09 E.	.44	S. 74½ E.	.58	30
	August	5	2	7	0	1	3	28	14	0	N. 67 21 W.	.57	S. 46½ W.	.37	31
	September	9	3	24	0	0	2	17	5	0	N. 17 28 E.	.23	S. 52 E.	.41½	30
	October	12	2	7	2	1	3	22	12	0	N. 53 09 W.	.46	S. 29½ W.	.23	31
	November	8	4	12	1	2	0	29	5	0	N. 53 19 W.	.35	S. 5½ W.	.27	30
	December	12	0	0	0	0	0	30	20	0	N. 59 22 W.	.83	S. 83½ W.	.46	31
	Spring	56	38	10	4	1	2	14	59	0	N. 8 19 W.	.65½	N. 44 E.	.23½	92
	Summer	13	25	24	0	1	4	33	18	2	N. 9 52 W.	.32½	S. 52 E.	.25	61
	Autumn	29	9	43	3	3	5	68	22	0	N. 40 07 W.	.30½	S. 13½ E.	.25	91
	Winter	62	10	0	0	1	1	65	41	0	N. 42 17 W.	.72	N. 75½ W.	.23½	90
	The year	...	...	...	...	...	...	...	...	...	N. 28 24 W.	.54	......	...	334

(Nos. 19 and 20.) **Atlantic Ocean.** Longitude 5° to 65° West.

Computed from observations made by John Ross, for 33 days, in the year 1818; by Parry, for 38 days, in 1820 to 1825; by Kane, for 7 days, in 1850; by Snow, for 36 days in the same year; by the French Commission, for 14 days, in 1838 to 1840; and by McClintock, for 9 days, in 1859; together with observations collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory under the direction of Capt. M. F. Maury, Superintendent. for 228 days.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
19. Long. 20° to 65° W.	Spring	8	0	29	0	6	8	21	2	10	14	22	8	6	4	38	6	0	N. 51° 30′ W.	.12	......	...	30
	Summer	36	3	28	0	50	13	25	0	39	17	33	14	46	14	41	5	10	S. 68 45 W.	.06	......	...	62
	Autumn	36	2	46	0	18	2	24	2	23	13	38	24	23	20	31	12	9	N. 70 21 W.	.18	......	...	54
20. Long. 5° to 20° W.	Spring	0	6	6	6	18	0	0	18	6	12	24	42	30	18	6	12	0	S. 67 43 W.	.42	N. 20° E.	.07	34
	Summer	12	18	22	6	24	0	13	48	18	64	74	68	64	56	49	34	16	S. 71 2 W.	.41	N. 15½ E.	.09½	98
	Autumn	11	33	14	8	2	19	24	24	48	19	51	70	21	14	9	1	21	S. 34 8 W.	.33	S. 78 E.	.23	68
	Winter	0	0	0	0	0	0	0	0	0	36	12	30	12	12	6	6	0	S. 62 59 W.	.78	S. 65½ W.	.31	19
	The y'r[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 23 W.	.47	......	...	219

[1] Computed from the resultants for the seasons.

(Nos. 21 to 25.) **Northern Ireland.**

Observed at the following places, viz.:—

Buncrana, by an officer of the Coast-guard in the year 1851.

Londonderry, during the year 1800.

Portrush, at the Coast-guard station, in the year 1851.

Slieve Snaght, by Lieuts. J. E. Portlock and T. A. Larcom, of the Ordnance Survey, for 23 days in the autumn of the year 1827.

(Nos. 21 to 25.) **Northern Ireland**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
21. Londonderry.	Spring	7	3	7	24	7	8	26	11	...	S. 46° 23′ W.	.16	S. 57° E.	.22	92
	Summer	18	0	2	3	9	9	51	15	...	N. 80 08 W.	.60	N. 71½ W.	.30½	92
	Autumn	12	11	4	5	3	9	30	44	...	N. 53 56 W.	.55	N. 24½ W.	.35	91
	Winter	4	3	8	43	8	10	29	9	...	S. 3 20 W.	.29	S. 43½ E.	.41	90
	The year	41	17	21	75	27	36	136	79	...	N. 88 31 W.	.30	......	...	365
22. Buncrana.	Summer	13	8	6	12	11	19	12	19	...	S. 87 26 W.	.18	N. 29½ E.	.38	92
	Winter	10	5	5	10	15	27	15	13	...	S. 59 2 W.	.12	N. 78½ E.	.52	90
	The year	12	7	6	11	13	23	14	16	...	S. 69 0 W.	.24	......	...	365
23. Slieve Snaght.	Autumn	7	14	1	19	6	40	4	9	4	S. 30 21 W.	.27	......	...	23
24. Portrush.	Summer	20	5	6	6	24	15	11	13	...	S. 70 14 W.	.18	North	.57	92
	Winter	15	3	4	7	35	23	9	4	...	S. 25 9 W.	.19	N. 60½ E.	.38	90
	The year	17	4	5	6	30	19	10	8	...	S. 37 28 W.	.28	......	...	365
25. Northern Ireland.[1]	Summer	51	13	14	21	44	43	74	47	...	N. 87 36 W.	.32½	N. 81 W.	.08	
	Winter	29	11	17	60	58	60	53	26	...	S. 28 21 W.	.31½	S. 33 E.	.27	
	The year	70	28	32	92	70	78	160	103	...	S. 80 51 W.	.28	......	...	

[1] Nos. 21, 22, 23 and 24, combined.

(Nos. 26 to 33.) **Western Scotland** (west of longitude 4°).

Observed at the following places, and reported, for the most part, to the Scottish Meteorological Society, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Ardvoirlich	A. McDougall	0	7	1864.
Auchendrane House	Henry Gibb	3	8	1864 to 1868 inclusive.
Baillieston	P. Jarvie	4	5	1863 to 1868 inclusive.
Balloch Castle	D. Hill	4	5	1863 to 1868 inclusive.
Benbecula	....	....		See "Harris and Benbecula," below.
Bloomhill	John Fleming	3	0	1864.
Cairndow	John Brodie	2	8	1865 to 1868 inclusive.
Cardross	John Fleming	4	0	1863 to 1868 inclusive.
Callton Mor	J. Russell	11	9	1857 to 1868 inclusive.
Castle Toward	....	2	0	1834 and 1835.
Corrimony	W. McGregor	1	5	1866 to 1868 inclusive.
Culloden	Arthur Forbes	11	9	1857 to 1868 inclusive.
Deanston House	D. Hinderson	3	3	1865 to 1868 inclusive.
Drishaig	A. McDougall	0	7	1863 and 1864.
Eallabus	R. Ballingal	2	3	1866 to 1868 inclusive.
Girvan	P. Paterson	4	3	1863 to 1868 inclusive.
Glasgow	Professor Grant	4	2	1863 to 1868 inclusive.
Greenock	J. Gardner	4	6	1863 to 1868 inclusive.
Harris and Benbecula	F. W. J. Thomas	0	3	1863.
Helensburgh	A. McKenzie	1	3	1866 to 1868 inclusive.
House of Tongue	D. Brims	4	5	1863 to 1868 inclusive.
North Unst	William Clark	1	6	1866 to 1868 inclusive.
Oban	Captain Bedford	1	6	1863 to 1865 inclusive.
Otter House	W. Rankine	3	4	1863 to 1867 inclusive.
Paisley	T. Stewart	4	3	1863 to 1868 inclusive.
Portree	J. Grant	4	1	1863 to 1868 inclusive.
Portsoy	John Bisset	0	9	1865.
Scourie	J. Simpson	4	4	1863 to 1868 inclusive.
Slogarie	Thomas R. Bruce	3	3	1864 to 1868 inclusive.
South Cairn	J. Kennedy	4	6	1863 to 1868 inclusive.
Stornoway	John Pullinger	11	3	1857 to 1868 inclusive.
Stronvar	D. Carnegie	4	2	1863 to 1868 inclusive.
Upper Glencroe	A. McDougall	0	2	1864.

(Nos. 26 to 33.) **Western Scotland** (west of long. 4°).—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of Resultant.	Ratio of Resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
26. Stornoway, 1857–1867.	The year	28	28	39	27	42	87	64	40	10	S. 58° 30′ W.	.24½			
27. Latitude 58° to 59°.	Spring	143	177	256	154	166	413	218	160	58	S. 35 39 W.	.13	N. 76½° E.	.11½	1745
	Summer	203	173	227	125	186	520	350	222	72	S. 69 54 W.	.22½	N. 30½ W.	.06	2078
	Autumn	167	126	195	127	236	492	253	175	58	S. 50 4 W.	.26	S. 14 W.	.03	1829
	Winter	127	131	143	122	242	533	316	184	45	S. 54 39 W.	.34	S. 55 W.	.11	1845
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 25 W.	.23	......	...	7497
28. Culloden, 1857–1867.	The year	8	19	46	3	55	87	99	6	42	S. 47 59 W.	.38			
29. Latitude 57° to 58°.	Spring	90	144	249	51	224	348	507	72	128	S. 57 45 W.	.28	N. 42 E.	.08	1813
	Summer	63	96	232	45	219	421	513	70	200	S. 53 1 W.	.35½	S. 33½ W.	.02½	1859
	Autumn	57	74	127	36	262	320	377	67	255	S. 51 20 W.	.36	S. 16 E.	.02	1575
	Winter	102	67	100	58	329	337	445	96	187	S. 55 12 W.	.40	S. 67 W.	.05	1723
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 7 W.	.35	......	...	6970
30. Callton Mor, 1857–1867.	The year	27	45	19	52	17	118	32	55	0	S. 59 24 W.	.21			
31. Latitude 56° to 57°.	Spring	157	389	314	338	154	587	313	390	45	S. 60 18 W.	.07½	N. 74 E.	.07	2697
	Summer	164	272	204	323	225	543	396	539	117	S. 79 6 W.	.19½	N. 70 W.	.06	3213
	Autumn	198	342	218	417	198	447	378	400	135	S. 68 47 W.	.09	N. 63 E.	.05	3033
	Winter	186	348	258	386	192	864	468	384	63	S. 57 8 W.	.22	S. 41 W.	.08½	3151
	The year[1]	...	...	...	...	...	...	...	...	...	S. 66 42 W.	.13	......	...	12094
32. Castle Toward.	The year	74	20	166	34	140	97	85	114	0	S. 25 10 W.	.10	......	...	730
33. Latitude 55° to 56°.	Spring	186	412	461	284	286	557	471	293	317	S. 31 18 W.	.07	N. 75½ E.	.10	3267
	Summer	213	323	342	318	328	866	865	441	523	S. 67 29 W.	.26	S. 82½ W.	.10	4219
	Autumn	145	304	554	396	235	712	577	415	550	S 41 31 W.	.13	S. 76 E.	.05	3888
	Winter	171	344	341	349	210	809	735	374	280	S. 64 41 W.	.23	S. 78 W.	.07½	3613
	The year[1]	...	...	...	...	...	...	...	...	...	S. 58 5 W.	.16½	......		

[1] Computed from the resultants for the seasons.

(Nos. 34 to 49.) **Eastern Scotland** (east of longitude 4° West).

Observed at the following places, and reported, for the most part, to the Scottish Meteorological Society, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Aberdeen	A. Beverly & A. Cruickshank	11	9	1857 to 1868 inclusive.
Aberdour	J. Thomson	4	1	1863 to 1868 inclusive.
Arbroath	A. Brown	4	6	1863 to 1868 inclusive.
Balfour	J. Dewar	4	5	1863 to 1868 inclusive.
Ballater	J. W. Paterson	3	3	1865 to 1868 inclusive.
Banchory	J. Forrest	4	6	1863 to 1868 inclusive.
Banff Castle		1	0	1831 and 1832.
Barry	J. Proctor	4	6	1863 to 1868 inclusive.
Bedford Hospital	J. G. McKendrick	0	8	1866 and 1867.
Bowhill	J. Mathieson	4	5	1863 to 1868 inclusive.
Braemar	J. Cameron	4	6	1863 to 1868 inclusive.
Bronxholm		10	0	Date not preserved.
Calton Hill, Edinburgh		10	0	Date not preserved.
Cargen	P. Dudgeon	4	5	1863 to 1868 inclusive.
Castle Newe	A. Walker	4	9	1863 to 1868 inclusive.
Clunie Manse		8	0	1833 to 1836 inclusive, and four years whose date is not preserved.
Dalkeith	W. Thomson	4	4	1863 to 1868 inclusive.
Dollar	J. Westwood	4	4	1863 to 1868 inclusive.

(Nos. 34 to 49.) **Eastern Scotland** (east of long. 4°).—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Douglass Castle	J. Johnstone	4	5	1863 to 1868 inclusive.
Drumlanrig	James McIntosh	4	6	1863 to 1868 inclusive.
Dumfries	J. Gilchrist	4	5	1863 to 1868 inclusive.
Dundee	W. R. McKelvie	2	9	1865 to 1868 inclusive.
Dunrobin	J. Mitchell	4	6	1863 to 1868 inclusive.
East Linton	J. Storie	4	4	1863 to 1868 inclusive.
Edinburgh Castle	W. Mills	3	3	1863 to 1867 inclusive.
Elgin	J. Martin	7	3	1835 to 1837 and 1863 to 1868 both inclusive.
Eyemouth	W. J. Reid	0	9	1868.
Feddinch Mains	R. Muirhead	0	6	1867 and 1868.
Fettercairn	A. C. Cameron	4	6	1863 to 1868 inclusive.
Galashiels	R. Somerville	1	5	1866 to 1868 inclusive.
Glencairn	Robert Home	2	6	1865 to 1868 inclusive.
Hawick	A. R. Turnbull	1	0	1867 and 1868.
Inchkeith		10	0	Date not preserved.
Inveresk	W. McAuslane	11	9	1857 to 1868 inclusive.
Inverury	James Bisset	0	9	1865.
Kettins	J. Gibb	4	6	1863 to 1868 inclusive.
Kinfaun's Castle		12	0	1813 to 1817, and 1819 to 1821, both inclusive, 1825, 1828, 1835 and 1836.
Kirkpatrick-Juxta	G. Burgess	1	3	1867 and 1868.
Kirkwall (Orkneys)	J. G. Iverack	4	6	1863 to 1868 inclusive.
Leith	James Bolam	2	9	1865 to 1868 inclusive.
Makerstown	Observatory	4	0	1843 to 1846 inclusive.
Marchmont	Peter Loney	0	10	1867 and 1868.
Milne-Graden	W. Remwick	4	6	1863 to 1868 inclusive.
Montrose (Museum)	J. Campbell	4	2	1863 to 1868 inclusive.
Montrose (Asylum)	J. Howder and R. Reid	2	11	1865 to 1868 inclusive.
Mowhaugh	R. Carter	4	1	1863 to 1868 inclusive.
Muthill	A. J. T. Morris	2	2	1866, 1867 and 1868.
New Pitsligo	D. Sturrock	4	6	1863 to 1868 inclusive.
Nookton	W. M. G. Millar	4	6	1863 to 1868 inclusive.
Normal Sch'l, Edinb'gh	T. H. Core	1	6	1863 to 1865 inclusive.
North Esk Reservoir	J. Garnock	5	3	1863 to 1868 inclusive.
Orkney Islands[1]		2	6	1854, 1855, 1856 and 1868.
Perth	J. McGlashan	4	3	1863 to 1868 inclusive.
Portsoy	John Bisset	0	9	1865.
Sandwich	Charles Clouston	11	9	1857 to 1868 inclusive.
Smeaton	J. Black	4	6	1863 to 1868 inclusive.
Strobo Castle	J. Anderson	3	6	1863 to 1868 inclusive.
Taymouth	P. Murray	2	6	1863 to 1866 inclusive.
The Glen	W. Finlay	3	8	1863 to 1868 inclusive.
Thirlestane	J. Whitton	4	6	1863 to 1868 inclusive.
Thurston	R. Mossman	4	6	1863 to 1868 inclusive.
Tornaveen	A. Scott	1	3	1864 and 1865.
Trinity-Gask	R. Wylie	4	6	1863 to 1868 inclusive.
Wanlockhead	G. Dawson	3	7	1863 to 1868 inclusive.
Wick	W. Burney	1	0	1823.
Yester	A. Shearer	4	4	1863 to 1868 inclusive.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
34. Sandwick.																						
The year	26	...	21	...	23	...	78	...	36	...	52	...	61	...	44	...	24	S. 32° 40′ W.	.18	......	...	4017
35. Orkney Islands.																						
Spring	158	8	146	5	148	9	333	1	144	1	210	3	214	1	158	4	67	S. 8 56 E.	.09	N. 65½° E.	.11	1626
Summer	118	5	107	0	89	3	328	7	132	4	124	6	286	10	274	0	98	S. 68 54 W.	.12	N. 12 W.	.09½	1739
Autumn	108	5	109	0	91	1	283	0	204	1	241	1	237	0	178	4	95	S. 32 48 W.	.19	S. 31 W.	.04	1618
Winter	109	3	85	1	83	3	295	10	253	4	301	5	270	7	156	5	77	S. 31 29 W.	.28	S. 28 W.	.11½	1603
The year	493	21	447	6	411	16	1239	18	733	10	876	15	1007	18	766	13	337	S. 33 57 W.	.16½	......	...	6586

[1] Particular place not specified.

(Nos. 34 to 49.) **Eastern Scotland.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
36. Wick.																						
Spring	18	...	3	...	6	...	9	...	21	...	14	...	8	...	13	...	0	S. 57° 47′ W.?	.16	N.30½° E.	.07½	92
Summer	25	...	1	...	0	...	7	...	28	...	16	...	9	...	6	...	0	S. 52 50 W.?	.26	S. 80 W.	.03½	92
Autumn	8	...	3	...	6	...	8	...	18	...	18	...	18	...	12	...	0	S. 55 4 W.?	.34	S. 67½ W.	.11½	91
Winter	13	...	6	...	5	...	16	...	15	...	17	...	10	...	8	...	0	S. 24 45 W.?	.19	S. 76 E.	.09½	90
The year	64	...	13	...	17	...	40	...	82	...	65	...	45	...	39	...	0	S. 49 6 W.?	.23	......	...	365
37. Banff Castle.																						
The year	50	...	52	...	29	...	30	...	87	...	61	...	24	...	31	...	0	S. 2 47 W.	.12	.....	...	365
38. Elgin, 1835, 1836 and 1837.																						
January	1	0	3	0	1	0	10	7	13	1	23	0	23	0	9	2	...	S. 46 18 W.	.50½	S. 56 W.	.06½	93
February	0	0	0	0	0	1	5	3	7	4	42	2	3	1	7	10	...	S. 50 21 W.	.61	S. 63½ W.	.18	85
March	0	1	3	0	3	1	4	9	1	7	38	0	12	9	12	2	...	S. 49 34 W.	.54	S. 69 W.	.11	93
April	1	0	8	0	4	1	6	5	8	2	28	0	10	0	10	7	...	S. 51 37 W.	.33	N.25 E.	.12	90
May	4	2	7	0	2	1	6	6	3	0	20	0	8	2	19	13	...	N. 70 23 W.	.31	N. 2½ E.	.41½	93
June	5	0	9	0	1	0	4	8	10	0	20	0	3	6	17	6	...	S. 82 08 W.	.27	N. 9 E.	.28	90
July	2	1	6	0	0	0	7	10	17	1	31	0	9	1	16	3	...	S. 44 17 W.	.43	S. 77 W.	.01	93
August	0	2	1	0	3	1	9	12	4	1	30	0	10	0	11	9	...	S. 46 17 W.	.39	N.34 E.	.05	93
September	0	0	2	0	4	1	9	18	11	1	28	0	3	0	4	9	...	S. 12 55 W.	.48½	S. 51 E.	.26	90
October	1	0	0	0	0	0	6	15	7	4	38	0	7	1	6	8	...	S. 45 07 W.	.58	S. 46½ W.	.14	93
November	1	0	1	0	5	0	7	7	18	7	31	0	11	0	1	1	..	S. 23 12 W.	.66	S. 10 E.	.30	90
December	1	0	0	0	1	0	13	3	20	3	31	0	5	0	16	0	...	S. 40 18 W.	.48	S. 1 E.	.05	93
Spring	5	3	18	0	9	3	16	20	12	9	86	0	30	2	41	22	...	S. 65 57 W.	.36	N. 6½ W.	.16½	276
Summer	7	3	16	0	4	1	20	30	31	2	81	0	22	7	44	18	...	S. 58 31 W.	.32	N.14 E.	.15	276
Autumn	2	0	3	0	9	1	22	40	36	12	97	0	21	1	11	18	...	S. 25 40 W.	.54	S. 23½ E.	.19	273
Winter	2	0	3	0	2	1	28	13	40	8	96	2	31	1	32	12	...	S. 43 08 W.	.14	N.45½ E.	.30	271
The year	16	6	40	0	24	6	86	103	119	31	360	2	104	11	128	70	...	S. 44 47 W.	.44	......	...	1096
39. Latitude 57° to 58°.																						
Spring	335	3	352	0	285	3	334	20	387	9	815	0	478	2	493	22	234	S. 66 53 W.	.18	N.53½ E.	.09	3776
Summer	379	3	372	0	327	1	348	30	481	2	917	0	504	7	570	18	305	S. 64 51 W.	.18½	N.48 E.	.09	4356
Autumn	189	0	230	0	244	1	329	40	433	12	1111	0	583	1	473	18	189	S. 52 39 W.	.34	S. 23 W.	.08	3879
Winter	251	0	213	0	166	1	347	13	390	8	1277	2	774	1	501	12	190	S. 61 46 W.	.40	S. 67 W.	.12	4054
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 13 W.	.28	......	...	16065
40. Kinfaun's Castle.																						
The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 9 W.	.24	......	...	4383
41. Clunie Manse.																						
The year	61	...	141	...	141	...	128	...	82	...	470	...	189	...	249	...	...	S. 81 3 W.	.25	......	...	1441
42. Inchkeith.																						
The year	152	...	205	...	739	...	224	...	292	...	339	...	1371	...	217	...	113	S. 71 38 W.	.21	......	...	3652

[1] Computed from the resultants for the seasons.

[2] Computed from the following observations, viz.: N. and N.E. 268, E. and S.E. 1181, S. and S.W. 1120, W. and N.W. 1815.

(Nos. 34 to 49.) **Eastern Scotland.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
43. Latitude 56° to 57°.																						
Spring	436	...	557	...	602	...	414	...	481	...	816	...	882	...	410	...	573	S. 63°21′W.	.10	N.66° E.	.09½	5224
Summer	401	...	465	...	824	...	527	...	848	...	1213	...	1117	...	574	...	936	S. 43 12 W.	.19	S. 40 E.	.07	7031
Autumn	385	...	429	...	523	...	433	...	515	...	1104	...	1307	...	594	...	897	S. 65 40 W.	.19⅓	N.28⅓ W.	.01	6332
Winter	513	...	410	...	375	...	390	...	504	...	1299	...	1516	...	661	...	685	S. 77 41 W.	.31½	N.84½ W.	.13	6707
The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	S. 64 48 W.	.19½	......	...	25294
44. Calton Hill (Edinburgh).																						
The year	93	...	158	...	471	...	158	...	111	...	630	...	798	...	444	...	789	S. 80 10 W.	.24	......	...	3652
45. Inveresk.																						
The year	27	...	40	...	21	...	23	...	52	...	120	...	59	...	23	...	0	S. 49 13 W.	.34	......	...	4017
46. Bronxholm.																						
The year	...	...	...	...	1333	...	...	...	...	...	...	..	2319	...	...	...	...	West	.27	......	..	3652
47. Makerstown, number of observations.																						
The year	779	1318	1668	867	431	177	329	575	1088	2672	4212	1949	1998	726	932	866	...	S. 64 16 W.	.33	......	...	368
48. Makerstown, sums of forces.[2]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 14 W.	.14	......	...	368
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 39 W.	.25	......	...	368
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 49 W.	.26	......	...	364
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 8 W.	.43	......	...	361
The year	711	757	722	442	217	84	163	362	749	1945	3411	1262	990	693	689	654	...	S. 65 18 W.	.40	......	...	1461
49. Latitude 55° to 56°.																						
Spring	666	..	832	...	817	...	761	...	712	...	1398	...	1525	...	821	...	172	S. 75 11 W.	.15½	N.56 E.	.13	7704
Summer	617	...	666	...	703	...	705	...	962	...	2055	...	2441	...	1012	...	343	S. 69 18 W.	.33	N.79 E.	.05	9504
Autumn	529	...	557	...	699	...	783	...	923	...	1945	...	1884	...	890	...	325	S. 59 54 W.	.31½	S. 15 W.	.04½	8535
Winter	681	...	538	...	524	...	848	...	934	...	2112	...	1982	...	1120	...	236	S. 67 0 W.	.33½	S. 71 W.	.04½	8975
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 51 W.	.28	......	...	34718

[1] Computed from the resultants for the seasons.

[2] The published record does not give the numbers for the separate seasons in detail. The direction of the resultants for the different months are given as follows, viz.: January S. 60° 30′ W., February N. 72° 42′ W., March S. 63° 42′ W., April N. 86° 6′ W., May N. 24° 12′ E., June S. 52° 36′ W., July S. 50° 0′ W., August S. 67° 18′ W., September S. 63° 54′ W., October S. 57° 12′ W., November S. 30° 42′ W., December S. 62° 42′ W.

(No. 50.) **North Sea.**

Computed from observations collected and classified, from the logs of different sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent, as follows, viz. :—

Summer: N. N. E. 11, N. E. 17, East 4, E. S. E. 10, S. E. 4, S. S. E. 2, South 13, S. S. W. 6, S. W. 28, W. S. W. 2, West 5, W. N. W. 13, N. W. 3, N. N. W. 3; calm or variable, 3.

Direction of resultant, S. 35° 38′ W.(??)

Ratio of resultant to sum of winds, .15.

Number of days, 26.

Autumn: North 2, N. N. E. 2, N. E. 2, E. N. E. 15, East 7, E. S. E. 9, S. E. 6, S. S. E. 4, South 10, S. S. W. 17, S. W. 19, W. S. W. 3, West 6, W. N. W. 2, N. W. 4, N. N. W. 2; calm or variable, 34.

Direction of resultant, S. 3° 22′ E.(?)

Ratio of resultant to sum of winds, .24.

Number of days, 40.

(Nos. 50(*a*) to 56.) **Southern Norway.**

Observed at the following places, viz. :—

Christiana, at the Observatory from April, 1837, to December, 1863, inclusive, and 1867.

Lindesnes, for 6 years, 1863 to 1868, inclusive.

Lister, for 6 years, 1863 to 1868, inclusive.

Mandal, by Hansen, for 7 years, 1861 to 1867, inclusive.

Sandosund, by Olsen, for 7 years, 1861 to 1867, inclusive.

Skudesnes, by Christensen, Storhoug, and Egeland, for 7 years, 1861 to 1867.

Spydberg, during the years 1784 and 1785. The author is in doubt in regard to the geographical position of this place.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
50 (*a*). Skudesnes.	January	65	81	141	175	207	159	68	56	48	....	...	......	...	217
	February	83	63	117	147	188	117	100	83	102	....	...	......	...	197
	March	111	71	130	144	215	72	65	75	117	....	...	......	...	217
	April	235	41	63	77	189	99	84	137	75	....	...	......	...	210
	May	241	23	64	55	173	144	82	153	65	....	...	......	...	217
	June	290	34	67	33	145	115	101	151	64	....	...	......	...	210
	July	278	15	32	50	138	131	118	190	48	....	...	......	...	217
	August	226	36	39	55	192	146	102	156	48	....	...	......	...	217
	September	176	37	81	93	241	137	82	81	72	....	...	......	...	210
	October	139	76	77	149	220	100	90	90	59	....	...	......	...	217
	November	132	78	127	159	179	68	108	78	71	....	...	......	...	210
	December	106	45	88	180	175	124	128	104	50	....	...	......	...	217
	Spring	587	185	257	276	577	315	231	365	257	S. 71° 41′ W.	.06	N. 2° W.	.04	644
	Summer	794	85	138	138	475	392	321	497	160	N. 61 28 W.	.25	N. 42 W.	.24	644
	Autumn	447	191	285	401	640	305	280	249	202	S. 4 47 E.	.13	S. 45 E.	.10	637
	Winter	254	189	346	502	570	400	296	243	200	S. 7 22 E.	.22	S. 29 E.	.18	631
	The year	2082	600	1026	1317	2262	1412	1128	1354	819	S. 43 57 W.	.08½	......	...	2556
51. Lister.[1]	....	...	...	...	...	...	...	...	...	...	....	...	......	...	2192

[1] Dr. Buchan, in his work on the prevailing winds of the globe, gives them, for the several months of the year, at Lister and Lindensnes, as follows, viz. :—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Lister,	E.	E. & W.	E.	N. W.	N. W.	N. W.	N. W.	N. W.	N. W. & E.	E.	N. W.	E.
Lindensnes,	N. E.	W.	N. E.	N. E. & W.	N.E.&W.	W.	W.	W.	W.	N. E.	N. E.	W.

(Nos. 50(*a*) to 56.) **Southern Norway.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
52. Lindesnes.[1]	....	...	...	...	...	...	...	...	...	...	....	...	......	...	2192
53. Mandal.	January	41	215	158	51	49	110	102	29	240	....	...	......	...	217
	February	15	212	153	40	45	99	144	32	260	....	...	......	...	197
	March	25	330	187	22	25	56	67	38	250	....	...	......	...	217
	April	12	169	144	25	30	101	182	67	270	....	...	......	...	260
	May	9	120	120	22	54	186	241	40	208	....	...	......	...	217
	June	24	153	130	19	51	158	169	61	235	....	...	......	...	210
	July	10	58	87	47	75	201	311	72	139	....	...	......	...	217
	August	12	79	104	42	78	191	260	66	168	....	...	......	...	217
	Sept'mber	19	111	111	72	76	153	183	36	239	....	...	......	...	210
	October	16	151	192	60	49	128	149	34	221	....	...	......	...	217
	November	32	182	159	55	42	115	152	52	211	....	...	......	...	210
	December	22	178	125	46	41	121	187	69	211	....	...	......	...	217
	Spring	46	619	451	69	109	343	490	145	728	N. 28° 51′ E.	.06	N. 42° E.	.08	644
	Summer	46	290	321	108	204	550	740	199	542	S. 67 27 W.	.25	S. 66½ W.	.21	644
	Autumn	67	444	462	187	167	396	484	122	671	S. 27 21 E.	.04	S. 59 E.	.05½	637
	Winter	78	605	436	137	135	330	433	130	711	N. 56 47 E.	.08	N. 59½ E.	.10½	631
	The year	237	1958	1670	501	615	1619	2147	596	2652	S. 76 51 W.	.02½	......	...	2556
54. Spydburg.	The year	405	227	159	296	293	222	95	124	...	S. 86 57 E.	.10	......	...	731
55. Sandosund	January	126	248	39	82	90	190	75	54	96					
	February	188	235	39	51	48	243	52	35	109					
	March	163	335	55	28	51	174	25	48	121					
	April	110	238	38	38	81	266	51	59	119					
	May	97	230	33	40	86	382	39	26	67					
	June	68	200	44	62	89	371	62	30	74					
	July	93	147	18	43	96	444	50	51	58					
	August	80	141	43	48	112	406	72	39	59					
	September	54	173	70	82	85	345	73	29	89					
	October	83	195	55	65	65	299	104	50	84					
	November	112	240	47	79	74	211	85	87	65					
	December	142	149	35	64	75	266	96	94	79					
	Spring	370	803	126	106	218	822	115	133	307	N. 7 46 W.	.05	N. 43½ E.	.11	
	Summer	241	488	105	153	297	1221	287	120	191	S. 48 33 W.	.29	S. 40 W.	.20	
	Autumn	249	608	172	226	224	855	262	166	238	S. 49 1 W.	.09	S. 31 E.	.03	
	Winter	456	632	113	197	213	699	223	183	284	N. 38 38 W.	.08	N. 20½ E.	.10	
	The year	1316	2531	516	682	952	3497	887	602	1020	S. 69 20 W.	.09			

56. Christiania. (No. of observations.)

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
Jan.	153	127	167	33	32	7	42	56	60	14	18	12	10	13	36	31	26	....	...	......	...	868
Feb.	142	100	136	32	24	9	47	44	59	19	21	10	15	15	34	30	31	....	...	......	...	790
Mar.	152	123	145	33	55	9	40	42	70	15	20	15	28	12	28	37	39	....	...	......	...	868
April	141	107	125	36	46	9	63	57	94	26	33	12	14	9	36	29	28	....	...	......	...	870
May	95	67	106	41	45	17	67	86	174	44	34	16	16	7	23	39	15	....	...	......	...	899
June	69	40	87	35	48	14	73	99	184	60	36	18	22	12	23	26	17	....	...	......	...	870
July	65	52	82	31	44	16	96	108	199	49	34	17	22	9	29	25	13	....	...	......	...	899
Aug.	74	43	121	38	61	18	91	81	162	47	36	11	26	7	16	25	34	....	...	......	...	899
Sept.	113	69	140	37	47	19	82	65	97	37	23	12	15	11	32	27	31	....	...	......	...	870
Oct.	155	109	159	23	30	10	49	64	75	29	15	11	27	15	24	52	47	....	...	......	...	899
Nov.	190	109	172	27	21	4	39	41	46	14	15	12	23	16	25	47	58	....	...	......	...	870
Dec.	162	120	198	26	26	8	27	29	76	10	18	6	15	11	32	47	45	....	...	......	...	899
Spr.	388	297	376	110	146	35	170	185	338	85	87	43	58	28	87	105	82	N. 57° 11′ E.	.24	S. 20° E.	.00½	2637
Sum.	208	135	290	104	153	48	260	288	545	156	106	46	70	28	68	76	64	S. 42 17 E.	.28	S. 2½ W.	.34	2668
Aut.	458	287	471	87	98	33	170	170	218	80	53	35	65	42	81	126	136	N. 39 12 E.	.32	North	.12	2639
Win.	457	347	501	91	82	24	116	129	195	43	57	28	40	39	102	128	102	N. 31 26 E.	.41	N. 3 E.	.22	2557
Year	1511	1066	1638	392	479	140	716	772	1296	364	303	152	233	137	338	435	384	N. 57 36 E.	.24	......	...	10501

[1] For note see page 120.

(Nos. 50(*a*) to 56.) **Southern Norway.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.
	Relative Prevalence of Winds from the Different Points of the Compass.																	
56. Christiania. (Sums of force, 1837 to 1859.)																		
January	204.5	136.1	201.4	30.7	42.4	13.4	56.3	70.2	77.7	13.4	23.5	11.8	18.1	5.5	45.4	49.6		
February	209.7	120.4	155.3	33.9	30.5	7.1	59.3	68.1	102.0	23.4	20.1	11.3	34.6	13.8	51.0	59.7		
March	176.7	106.0	146.1	29.5	40.4	12.0	60.1	53.5	114.0	35.3	27.0	18.6	44.1	16.0	71.4	49.2		
April	162.2	117.8	147.8	36.2	36.2	11.5	59.8	58.0	151.5	45.4	28.8	12.9	35.1	9.2	46.9	40.6		
May	131.6	76.2	105.4	28.4	42.0	13.9	81.5	96.1	212.0	57.6	28.8	12.1	30.2	7.5	38.4	38.4		
June	84.6	52.0	84.0	32.0	32.7	15.3	93.4	108.7	252.3	65.8	25.4	18.9	30.5	16.0	50.2	38.2		
July	77.1	52.8	72.9	28.9	38.4	12.3	110.2	136.0	251.5	66.9	29.9	20.4	29.9	9.2	38.8	24.7		
August	107.0	60.1	104.5	25.0	42.2	14.3	104.2	113.0	230.1	51.9	28.9	14.7	30.1	7.9	32.5	33.6		
September	133.5	91.0	113.5	25.9	41.8	13.7	83.9	87.3	184.9	45.1	23.7	16.3	32.2	8.5	58.4	40.7		
October	178.6	104.1	141.6	28.0	37.1	9.8	73.5	79.7	114.3	32.0	26.2	17.8	38.9	14.6	53.1	50.6		
November	227.7	124.0	186.1	26.9	28.9	4.0	69.7	50.7	64.6	17.8	21.4	9.5	28.1	10.7	57.8	72.1		
December	223.0	131.3	223.5	27.4	19.3	5.0	46.3	50.8	85.4	13.0	18.9	13.9	24.7	9.0	53.5	54.9		
The year	159.6	97.6	142.2	29.4	36.0	11.0	74.8	81.0	153.4	39.0	25.2	14.9	31.4	10.7	49.8	46.0	N. 47° 8′ E.	.19

(Nos. 57 to 63(*d*).) **Northern Denmark.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Daugaard................	Lindhardt......................	3	0	1868 to 1870 inclusive.
Christiansoe	....	8	0	Date not preserved.
Copenhagen.............	....	65	0	1783, 1784, 1785 and 1808 to 1869 inclusive.
Eskelund.................	Bay...............................	2	11	1868 to 1870 inclusive.
Gjerlev....................	Fredericksen..................	3	0	1868 to 1870 inclusive.
Hindholm................	Instructors and others......	10	0	1861 to 1870 inclusive.
Hofmansgave............	....	4	0	Date not preserved.
Landbohoiskolan.......	J. C. La Cour and others[1]...	10	0	1861 to 1870 inclusive.
Ryslinge..................	Jovgensen......................	3	0	1868 to 1870 inclusive.
St. Nicolai...............	Clausen.........................	2	10	1868 to 1870 inclusive.
Silkeborg.................	Fibiger..........................	6	8	February, 1862, to September, 1868, incl.
Skaarupgaard	K'harup	6	0	1861 to 1866 inclusive.
Skugen....................	....	9	0	Date not preserved.
Smidstrup	....	7	0	1861 to 1867 inclusive.
Tarum	....	7	0	1861 to 1867 inclusive.
Wyborg	Berg...............................	9	0	1862 to 1870 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.													
57. Tarum.	January	1	4	2	6	5	8	4	1	...	....	...	......	...	217
	February	2	4	2	4	3	8	4	1	...	....	...	......	...	197
	March	2	5	4	6	3	5	3	3	...	....	...	......	...	217
	April	2	3	2	4	3	5	5	6	...	....	...	......	...	210
	May	2	4	3	4	2	5	6	5	...	....	...	......	...	217
	June	2	2	3	3	3	5	7	5	...	....	...	......	...	210
	July	1	1	1	3	4	5	10	6	...	....	...	......	...	217
	August	1	1	1	4	4	7	8	5	...	....	...	......	...	217
	September	1	1	2	7	6	6	4	3	...	....	...	......	...	210
	October	1	4	3	7	4	4	4	4	...	....	...	......	...	217
	November	2	3	2	5	5	6	4	3	...	....	...	......	...	210
	December	1	3	2	6	4	7	5	3	...	....	...	......	...	217
	Spring	6	12	9	14	8	15	14	14	...	S. 59° 57′ W.	.09	N. 34½° E.	.13	644
	Summer	4	4	5	10	11	17	25	16	...	S. 70 20 W.	.39	N. 81 W.	.22½	644
	Autumn	4	8	7	19	15	16	12	10	...	S. 10 35 W.	.26	S. 47 E.	.13	637
	Winter	4	11	6	16	12	23	13	5	...	S. 21 51 W.	.28	S. 69 E.	.26½	631
	The year	18	35	27	59	45	71	64	46	...	S. 42 14 W.	.22	......	...	2556

[1] P. E. Muller, Bokelmann, and Hansen.

(Nos. 57 to 63(*d*).) **Northern Denmark.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
58. Smidstrup.	January	2	6	2	6	2	9	2	2	...	......	...	......	...	217
	February	2	7	1	5	3	6	3	1	...	......	...	......	...	197
	March	2	10	3	4	3	6	2	1	...	......	...	......	...	217
	April	3	4	3	3	2	5	7	3	...	......	...	......	...	210
	May	2	3	2	3	2	9	7	2	...	......	...	......	...	217
	June	3	5	3	3	2	5	7	3	...	......	...	......	...	210
	July	3	1	1	3	3	7	10	3	...	......	...	......	...	217
	August	2	1	1	4	3	11	6	3	...	......	...	......	...	217
	September	2	2	2	9	4	6	4	1	...	......	...	......	...	210
	October	2	4	3	8	2	7	3	2	...	......	...	......	...	217
	November	2	4	1	7	5	7	2	2	...	......	...	......	...	210
	December	2	4	2	7	3	7	2	4	...	......	...	......	...	217
	Spring	8	19	9	10	7	18	14	7	...	S. 79° 18′ W.	.02½	N. 21° E.	.16½	644
	Summer	7	5	4	10	8	27	23	8	...	S. 61 32 W.	.41	S. 81½ W.	.27½	644
	Autumn	6	10	6	24	11	20	9	5	...	S. 7 30 E.	.29	S. 43½ E.	.17½	637
	Winter	6	17	5	18	8	22	7	7	...	S. 9 33 E.	.15	N. 83½ E.	.11	631
	The year	27	51	24	62	34	87	53	27	...	S. 27 27 W.	.18	......	...	2556
58(*a*). Eskelund.	January	3	7	6	22	18	22	6	8						
	February	1	7	8	9	10	22	22	6						
	March	9	20	10	13	11	10	11	9						
	April	5	8	9	16	9	17	16	10						
	May	6	3	10	12	5	24	18	17						
	June	2	2	5	9	8	19	30	15						
	July	3	8	8	15	6	17	21	16						
	August	3	7	10	10	7	16	19	22						
	September	6	5	8	6	13	23	17	11						
	October	4	5	6	15	13	21	14	14						
	November	5	8	8	8	15	18	13	14						
	December	5	19	14	17	18	12	3	4						
	Spring	20	31	29	41	25	51	45	36	...	S. 49 29 W.	.13	N. 35 E.	.07	
	Summer	8	17	23	34	21	52	70	53	...	S. 74 4 W.	.32	N. 71 W.	.18	
	Autumn	15	18	22	29	41	62	44	39	...	S. 50 12 W.	.29	S. 65 W.	.10	
	Winter	9	33	28	48	46	56	31	18	...	S. 1 30 E.	.28	S. 58 E.	.19	
	The year	52	99	102	152	133	221	190	146	..	S. 44 44 W.	.20			
59. Wyborg.	January	6	11	6	11	14	27	10	8						
	February	6	9	5	10	5	22	17	12						
	March	12	21	8	13	7	18	9	6						
	April	6	10	5	9	8	23	19	11						
	May	6	8	6	10	13	22	18	11						
	June	5	6	4	7	7	16	23	23						
	July	8	8	3	6	8	21	20	20						
	August	2	11	2	5	13	26	19	16						
	September	8	4	2	8	15	27	14	13						
	October	8	10	5	10	13	23	10	14						
	November	9	9	4	10	14	24	10	10						
	December	12	10	7	9	11	23	11	9						
	Spring	24	39	19	32	28	63	46	28	...	S. 59 59 W.	.17	N. 77 E.	.09	
	Summer	15	25	9	18	28	63	62	59	...	S. 84 19 W.	.37	N. 66 W.	.17	
	Autumn	25	23	11	28	42	74	34	37	...	S. 54 28 W.	.29	South	.06	
	Winter	24	30	18	30	30	72	38	29	...	S. 53 41 W.	.23	S. 60 E.	.06	
	The year	88	117	57	108	128	272	180	153	...	S. 65 57 W.	.26			
59(*a*). Silkeborg.	January	2	11	13	6	11	21	24	5						
	February	7	10	10	2	5	18	20	7						
	March	7	11	22	4	7	15	14	6						
	April	7	8	16	4	6	14	19	14						
	May	7	9	12	8	11	18	21	9						
	June	11	5	10	1	5	14	34	10						
	July	13	6	5	2	6	14	32	20						
	August	10	3	5	2	11	19	29	13						
	September	9	2	5	2	14	27	20	10						
	October	6	3	16	6	14	22	20	8						
	November	14	7	5	4	10	25	14	7						
	December	9	5	14	4	8	22	22	11						
	Spring	21	28	50	16	24	47	54	29	...	S. 74 48 W.	.10	N. 79 E.	.18	
	Summer	34	14	20	5	22	47	95	43	...	N. 82 56 W.	.45	N. 53½ W.	.19	
	Autumn	29	12	26	12	38	74	54	25	...	S. 61 37 W.	.34	S. 13 W.	.11	
	Winter	18	26	37	12	24	61	66	23	...	S. 69 49 W.	.25	S. 53½ E.	.05	
	The year[1]	102	80	133	45	108	229	269	120	...	S. 78 47 W.	.28			

(Nos. 57 to 63(*d*).) **Northern Denmark.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
59(*b*). Daugaard.	January	4	3	13	4	17	19	25	8						
	February	2	2	5	8	10	14	36	8						
	March	8	11	22	4	9	8	21	10						
	April	2	7	7	4	12	15	30	10						
	May	3	2	7	4	14	17	35	11						
	June	4	3	4	1	6	15	42	12						
	July	5	5	13	3	7	13	27	16						
	August	8	6	16	2	7	13	29	13						
	September	6	5	5	2	9	16	36	10						
	October	4	5	5	4	13	13	39	9						
	November	8	8	6	4	16	11	27	10						
	December	6	13	14	4	16	16	16	6						
	Spring	13	20	36	12	35	40	86	31	...	S. 73° 40′ W.	.30	N. 76° E.	.05	
	Summer	17	14	33	6	20	41	98	41	...	N. 88 51 W.	.40	N. 28 W.	.13	
	Autumn	18	18	16	10	38	40	102	29	...	S. 79 6 W.	.43	N. 79 W.	.09	
	Winter	12	18	32	16	43	49	77	22	...	S. 55 36 W.	.32	S. 42 E.	.16	
	The year	60	70	117	44	136	170	363	123	...	S. 76 18 W.	.35			
59(*c*). Skaarup-gaard.	January	3	6	4	21	13	22	9	14						
	February	6	13	5	15	7	16	11	14						
	March	9	15	11	20	12	11	6	9						
	April	6	11	5	19	8	8	10	23						
	May	7	8	4	22	7	16	13	18						
	June	8	7	5	18	11	15	12	16						
	July	6	1	2	9	12	16	28	17						
	August	5	2	3	14	11	16	25	18						
	September	4	2	3	19	21	17	12	13						
	October	3	8	8	23	12	15	11	14						
	November	6	5	3	20	19	22	9	8						
	December	5	5	5	14	14	15	18	18						
	Spring	22	34	20	61	27	35	29	50	...	S. 7 59 W.	.05	N. 51 E.	.17	
	Summer	19	10	10	41	34	47	65	51	...	S. 68 49 W.	.34	N. 77 W.	.17	
	Autumn	13	15	14	62	52	54	32	35	...	S. 17 11 W.	.29	S. 19 E.	.15	
	Winter	14	24	14	50	34	53	38	46	...	S. 43 50 W.	.22	N. 75 W.	.01	
	The year	68	83	58	214	147	189	164	182	...	S. 41 41 W.	.21			
59(*d*). Gjerlev.	January	1	16	11	12	14	24	8	7						
	February	3	8	9	5	9	28	19	5						
	March	13	18	10	16	6	19	5	5						
	April	6	14	4	14	8	24	14	6						
	May	4	11	3	12	7	31	14	11						
	June	7	2	3	6	8	29	24	10						
	July	4	9	9	10	3	26	22	9						
	August	5	17	13	5	5	19	12	16						
	September	5	8	4	5	6	24	26	11						
	October	6	5	7	14	5	32	19	5						
	November	7	9	8	4	7	36	12	7						
	December	4	23	13	14	13	20	4	3						
	Spring	23	43	17	42	21	74	33	22	...	S. 27 56 W.	.18	S. 89 E.	.09	
	Summer	16	28	25	21	16	74	58	35	...	S. 73 18 W.	.29	N. 54 W.	.13	
	Autumn	18	22	19	23	18	92	57	23	...	S. 60 24 W.	.37	S. 81 W.	.15	
	Winter	8	47	32	31	36	72	31	15	...	S. 4 35 W.	.21	S. 71 E.	.17	
	The year	65	140	93	117	91	312	179	95	...	S. 49 29 W.	.23			

Relative Prevalence of Winds from the Different Points of the Compass.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of result. to sum of winds.	Number of days.
60. Skagen.	The year	415	285	929	388	440	325	1095	472	683	529	1645	837	1056	573	802	283	S.46°36′W.	.20	3287

(Nos. 57 to 63(*d*).) **Northern Denmark.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
61. Hofmansgave.	The year	7	9	10	14	14	20	15	11	...	S. 32° 14′ W.	.20	....	...	1461
61(*a*). Hendholm.	January	6	9	7	17	11	23	9	10						
	February	7	8	8	9	8	19	16	10						
	March	11	14	15	12	11	11	8	9						
	April	8	6	10	12	8	15	13	18						
	May	8	5	11	15	8	15	17	14						
	June	5	3	7	10	8	17	23	17						
	July	7	2	5	9	7	17	29	17						
	August	4	4	7	9	7	18	23	21						
	September	5	3	5	12	12	24	16	13						
	October	5	6	11	16	11	20	13	10						
	November	10	6	6	15	11	24	10	10						
	December	9	9	7	13	11	22	13	9						
	Spring	27	25	36	39	27	41	38	41	...	S. 55 58 W.	.07	N. 59° E.	.15	
	Summer	16	9	19	28	22	52	75	55	...	S. 80 35 W.	.39	N. 74 W.	.21	
	Autumn	20	15	22	43	34	68	39	33	...	S. 38 19 W.	.27	S. 11 E.	.10	
	Winter	22	26	22	39	30	64	38	29	...	S. 40 22 W.	.20	S. 56 E.	.06	
	The year	85	75	99	149	113	225	190	158	...	S. 57 50 W.	.22			
61(*b*). Ryslinge.	January	4	2	11	18	10	10	27	4						
	February	2	3	10	10	7	9	35	9						
	March	5	15	16	19	9	6	16	7						
	April	6	9	8	13	4	12	27	11						
	May	6	4	10	15	3	6	35	15						
	June	4	6	3	8	4	9	39	17						
	July	7	8	13	10	3	9	27	15						
	August	6	8	15	10	4	12	21	18						
	September	4	5	5	18	6	13	25	13						
	October	4	4	5	19	8	18	23	12						
	November	5	9	10	14	8	12	23	9						
	December	1	9	23	29	6	9	12	3						
	Spring	17	28	34	47	16	24	78	33	...	S. 78 55 W.	.11	N. 38° E.	.07	
	Summer	17	22	31	28	11	30	87	50	...	N. 78 21 W.	.28½	N. 43 W.	.18	
	Autumn	13	18	20	51	22	43	71	34	...	S. 56 8 W.	.25	S. 39 W.	.08	
	Winter	7	14	44	57	23	28	74	16	...	S. 6 17 W.	.21	S. 44 E.	.19	
	The year	54	82	129	183	72	125	310	133	...	S. 64 33 W.	.18			

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resul. to sum of winds.	Monsoon influences. Direction	Force.	Number of days.
62. Copenhagen, 1783–5.																						
The year	94	61	143	64	160	103	216	105	127	93	186	134	264	214	348	103	400	N. 86° 0′ W.	.14	....	...	1096
63. Copenhagen, 1808 to 1869.																						
January	2	...	3	...	3	...	5	...	5	...	6	...	4	...	3							
February	2	...	2	...	3	...	3	...	4	...	6	...	4	...	4							
March	2	...	3	...	4	...	4	...	4	...	5	...	5	...	4							
April	3	...	3	...	4	...	5	...	4		3	...	4	...	4							
May	3	...	2	...	5	...	5	...	4	...	4	...	4	...	4							
June	2	...	2	...	2	...	4	...	3	...	5	...	6	...	6							
July	2	...	2	...	2	...	3	...	4	...	5	...	7	...	6							
August	2	...	2	...	2	...	4	...	4	...	6	...	6	...	5							
September	2	...	2	...	3	...	4	...	4	...	6	...	5	...	4							
October	2	...	2	...	3	...	5	...	5	...	7	...	4	...	3							
November	2	...	3	...	3	..	4	...	5	...	7	...	4	...	2							
December	2	...	2	...	3	...	4	...	4	...	8	...	5	...	3							
Spring	8	...	8	...	13	...	14	...	12	...	12	...	13	...	12	...	...	S. 9 43 W.	.09	N. 63° E.	.13	
Summer	6	...	6	...	6	...	11	...	11	...	16	...	19	...	17	...	...	S. 72 9 W.	.28	N. 66 W.	.15	
Autumn	6	...	7	...	9	...	13	...	14	...	20	...	13	...	9	...	...	S. 27 22 W.	.25	S. 13 E.	.08	
Winter	6	...	7	...	9	...	12	...	13	...	20	...	13	...	10	...	...	S. 33 47 W.	.23½	S. 2½ E.	.05	
The year	26	...	28	...	37	...	50	...	50	...	68	...	58	...	48	...	...	S. 41 43 W.	.20			
63(*a*). Nos. 62 and 63 combined.																						
The year	120	61	171	64	197	103	266	105	177	93	254	134	322	214	396	103	400	S. 85 2 W.	.14½			

(Nos. 57 to 63(*d*).) **Northern Denmark.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
63(*b*). Landbohoiskolan.	January	5	6	15	12	13	21	13	7						
	February	4	7	11	8	11	20	17	7						
	March	6	12	27	11	10	11	9	8						
	April	6	6	12	12	11	12	15	15						
	May	7	7	13	11	13	14	14	11						
	June	6	5	14	6	12	16	19	12						
	July	5	6	7	10	12	16	24	14						
	August	5	6	10	11	12	17	20	14						
	September	5	4	9	14	15	19	15	10						
	October	4	6	16	13	12	19	15	7						
	November	7	6	11	12	12	22	13	8						
	December	6	13	11	10	10	19	16	9						
	Spring	19	25	52	34	34	37	38	34	...	S. 12° 58′ E.	.09	N. 63° E.	.14	
	Summer	16	17	31	27	36	49	63	40	...	S. 62 21 W.	.26	N. 76 W.	.13	
	Autumn	16	16	36	39	39	60	43	25	...	S. 23 45 W.	.24	S. 5 E.	.06	
	Winter	15	26	37	30	34	60	46	23	...	S. 30 7 W.	.20	S. 10 E.	.02	
	The year	66	84	156	130	143	206	190	122	...	S. 33 50 W.	.19			
63(*c*). St. Nicolai.	January	5	8	10	12	16	17	20	7						
	February	4	11	7	12	8	17	23	4						
	March	12	16	15	9	12	11	13	5						
	April	7	12	10	7	7	13	26	8						
	May	5	9	11	7	11	10	35	4						
	June	7	7	5	5	6	16	35	10						
	July	6	18	9	8	3	14	29	6						
	August	5	14	21	3	6	6	33	4						
	September	8	15	2	5	8	15	32	5						
	October	7	12	7	8	10	19	25	6						
	November	9	15	6	7	11	14	19	7						
	December	7	17	13	9	12	15	13	4						
	Spring	24	37	36	23	30	34	74	17	...	S. 75 35 W.	.12	N. 72° E.	.05	
	Summer	18	39	35	16	15	36	97	20	...	N. 82 46 W.	.23	N. 41 W.	.10	
	Autumn	24	42	15	20	29	48	76	18	...	S. 80 32 W.	.23	N. 80 W.	.06	
	Winter	16	36	30	33	36	49	56	15	...	S. 28 50 W.	.16	S. 42 E.	.13	
	The year	82	154	116	92	110	167	303	70	...	S. 73 43 W.	.17			
63(*d*). Christiansoe.	The year	441	819	859	969	702	1426	1631	1105	...	S. 65 44 W.	.18			

(Nos. 64 to 90.) **Southern Sweden.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Askersund	E. A. Appelholm	7	6	1858 to 1866 inclusive.
Carlshamn	N. Holmberg	8	0	1858 to 1866 inclusive.
Carlstad	J. Westerstahl................	6	9	1858 to 1866 inclusive.
Cronbreg	....	1	0	1842.
Goteborg	S. E. Follin	7	5	1859 to 1866 inclusive.
Halmstad	A. F. Toutin....................	7	11	1859 to 1866 inclusive.
Jonkoping	C. R. Heijl.......................	7	10	1858 to 1866 inclusive.
Kalmar	G. L. Idestrom................	8	1	December, 1858, to December, 1866, incl.
Linkoping..................	A. A. von Zweigbergk.......	8	1	December, 1858, to December, 1866, incl.
Lund	....	4	0	1863 to 1866 inclusive.
Nykoping...................	C. J. Olson......................	7	5	1859 to 1866 inclusive.
Orebro......................	J. A. Landin....................	8	1	December, 1858, to December, 1866, incl.
Skara........................	N. E. Forssell..................	7	5	August, 1859, to December, 1866, inclusive.
Stockholm.................	....	9	0	1862 to 1866 inclusive, and four years of earlier date, not preserved.
Upsal........................	Gustavus Swamberg	12	0	1855 to 1866 inclusive.
Wenersborg	E. Lignell	7	3	1859 to 1866 inclusive.
Westeras	J. W. Torngren................	7	4	September, 1859, to December, 1866, incl.
Westervik	G. S. Kallstenius.............	7	6	July, 1859, to December, 1866, inclusive.
Wexio........................	E. A. Rundgost	7	1	December, 1859, to December, 1866, incl.
Wisby	R. V. Toren.....................	7	5	August, 1859, to December, 1866, inclusive.

(Nos. 64 to 90.) **Southern Sweden.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
64. Goteborg.																						
Spring	99	31	148	90	216	32	59	38	161	71	139	65	351	53	89	33	226	S. 67° 2′ W.	.08	N. 26° E.	.11	
Summer	89	42	60	28	116	32	59	33	216	87	194	116	572	84	117	30	146	S. 72 3 W.	.38	N. 87 W.	.24	
Autumn	75	15	74	55	304	46	188	36	291	74	219	90	350	33	73	15	243	S. 11 43 W.	.23	S. 39 E.	.12	
Winter	91	20	113	59	255	50	150	48	205	46	179	76	270	39	68	12	303	S. 1 5 W.	.14½	S. 83 E.	.12	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 57 W.	.18			
65. Wenersborg.																						
Spring	85	145	333	63	29	12	34	52	115	237	93	25	53	12	34	26	577	N. 73 48 E.	.08	N. 13 E.	.15	
Summer	68	162	197	46	38	14	49	122	145	478	139	37	59	14	21	22	410	S. 4 31 W.	.22	S. 33 W.	.12½	
Autumn	63	97	195	88	41	41	79	159	145	291	104	29	48	8	24	27	467	S. 25 44 E.	.19½	S. 31½ E.	.08	
Winter	73	103	187	64	52	20	58	93	139	234	113	33	33	10	41	42	693	S. 25 58 E.	.10	N. 7 W.	.03½	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 22 17 E.	.13			
66. Halmstad.																						
Spring	142	59	164	53	189	28	83	33	166	67	271	50	259	84	176	47	332	S. 88 46 W	.12	N. 23 E.	.06½	736
Summer	150	43	64	31	91	34	60	60	173	96	280	109	384	145	200	49	234	S. 80 29 W.	.34	N. 88 W.	.19	736
Autumn	106	42	124	42	155	45	98	61	216	85	308	55	172	59	135	26	268	S. 35 11 W.	.17½	S. 29½ E.	.09	728
Winter	148	35	164	25	181	30	119	41	213	56	312	50	89	55	92	31	305	S. 20 33 W.	.06½	N. 87½ E.	.12	690
The year	546	179	516	151	616	137	360	195	768	304	1171	264	904	343	603	153	1139	S. 63 20 W.	.16½	......	...	2890
67. Cronberg.																						
January	2	...	17	...	42	...	2	...	0	...	13	...	11	...	0	...	...	N. 84 28 E.	.41	......	...	31
February	3	...	15	...	14	...	0	...	9	...	21	...	15	...	1	...	...	S. 31 57 W.	.14	......	...	28
March	8	...	6	...	9	...	0	...	3	...	17	...	41	...	9	...	...	N. 85 33 W.	.50	......	...	31
April	2	...	43	...	33	...	3	...	1	...	0	...	4	...	2	...	...	N. 62 57 E.	.77	......	...	30
May	5	...	39	...	13	...	2	...	6	...	7	...	14	...	7	...	...	N. 35 43 E.	.33	......	...	31
June	8	...	15	...	9	...	2	...	5	...	19	...	21	...	10	...	...	N. 74 7 W.	.24	......	...	30
July	7	...	16	...	2	...	5	...	2	...	26	...	24	...	10	...	...	N. 87 26 W.	.35	......	...	31
August	4	...	28	...	21	...	4	...	7	...	9	...	14	...	5	...	...	N. 60 33 E.	.25	......	...	31
September	6	...	23	...	8	...	2	...	5	...	28	...	12	...	1	...	...	S. 64 37 W.	.09	......	...	30
October	3	...	10	...	15	...	1	...	5	...	25	...	16	...	8	...	...	S. 65 11 W.	.22	......	...	31
November	17	...	15	...	5	...	0	...	6	...	11	...	25	...	3	...	...	N. 50 25 W.	.30½	......	...	30
December	4	...	24	...	10	...	0	...	1	...	15	...	26	...	7	...	...	N. 45 33 W.	.23½	......	...	31
Spring	15	...	88	...	55	...	5	...	10	...	24	...	59	...	18	...	...	N. 36 47 E.	.26	N. 56 E.	.22	92
Summer	19	...	59	...	32	...	11	...	14	...	54	...	59	...	25	...	...	N. 61 6 W.	.14	S. 79½ W.	.10	92
Autumn	26	...	48	...	28	...	3	...	16	...	64	...	53	...	12	...	...	N. 81 11 W.	.13	S. 57½ W.	.12	91
Winter	9	...	56	...	66	...	2	...	10	...	49	...	52	...	8	...	...	N. 60 50 E.	.07	S. 60½ E.	.10	90
The year	69	...	251	...	181	...	21	...	50	...	191	...	223	...	63	...	...	N. 17 48 W.	.09	......	...	365
68. Lund.																						
Spring	7	57	26	127	11	151	10	45	2	36	32	123	11	113	17	62	273	N. 48 15 E.	03½	N. 52 E.	.16	
Summer	2	32	3	69	14	77	12	54	4	42	34	202	33	179	16	73	255	S. 84 46 W.	.25	N. 78 W.	.20½	
Autumn	8	29	29	76	25	134	23	60	2	67	77	137	26	59	15	40	269	S. 34 48 E.	.11½	S. 81 E.	.16	
Winter	8	35	24	60	14	115	21	68	2	72	78	190	39	76	14	30	217	S. 39 40 W.	.20½	S. 27 W.	.12	
The year	25	153	82	332	64	477	66	227	10	217	221	652	109	427	62	205	1014	S. 52 53 W.	.12			
69. Nos. 67 and 68 combined.																						
Spring	22	57	114	127	66	151	15	45	12	36	56	123	70	113	35	62	273	N. 35 55 E.	.08	N. 50 E.	.16½	
Summer	21	32	62	69	46	77	23	54	18	42	88	202	92	179	41	73	255	S. 88 50 W.	.22	N. 75½ W.	.14½	
Autumn	34	29	77	76	53	134	26	60	18	67	141	137	79	59	27	40	269	S. 26 10 W.	.11	S. 28 E.	.06½	
Winter	17	35	80	60	80	115	23	68	12	72	127	190	91	76	22	30	217	S. 37 59 W.	.16	S. 12 W.	.08½	
The year	94	153	333	332	245	477	87	227	60	217	412	652	332	427	125	205	1014	S. 63 37 W.	.09			

[1] Computed from the resultants for the seasons.

(Nos. 64 to 90.) **Southern Sweden.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		No. of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
70. Jonkoping.																						
Spring	384	46	86	7	40	16	45	6	67	65	365	42	103	35	163	80	646	N. 60 5 W.	.23	N. 71 E.	.30	
Summer	261	30	39	16	37	14	33	13	96	107	377	40	201	44	101	54	730	S. 84 0 W.	.25	N. 41½ W.	.25	
Autumn	173	38	79	13	76	14	58	22	133	80	522	47	137	21	104	33	642	S. 58 58 W.	.25	N. 62½ W.	.15½	
Winter	211	32	96	19	74	23	57	36	215	116	561	52	157	27	127	55	449	S. 56 29 W.	.29	N. 71 W.	.17	
The year	1029	146	300	55	227	67	193	77	511	368	1825	181	598	127	495	222	2467	S. 77 21 W.	.23			
71. Carlstad.																						
Spring	156	77	101	59	155	124	118	53	157	148	149	67	61	38	107	105	243	S. 43 58 E.	.07	N. 46 E.	.12	
Summer	77	32	34	35	84	109	112	58	179	204	295	92	65	26	84	82	149	S. 21 37 W.	.31	S. 28 W.	.17½	
Autumn	118	43	58	44	139	125	82	51	91	119	203	78	56	43	83	85	287	S. 3 45 W.	.16	S. 45 E.	.03½	
Winter	129	54	65	45	141	102	75	45	125	128	196	76	92	50	131	134	385	S. 62 4 W.	.07	N. 15 W.	.10	
The year[1]	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	S. 14 54 W.	.14			
72. Wexio.																						
Spring	98	87	133	76	144	66	100	40	123	58	119	56	151	81	186	80	212	N. 25 7 W.	.08	N. 45 E.	.11	
Summer	100	35	77	52	98	54	124	57	128	75	222	129	301	125	214	43	267	S. 79 48 W.	.25	S. 73½ W.	.14	
Autumn	67	36	87	63	104	51	86	55	98	85	155	72	113	56	125	44	387	S. 46 36 W.	.09	S. 39½ E.	.07	
Winter	71	71	88	41	85	51	71	41	91	80	117	58	135	64	142	63	234	N. 82 50 W.	.11	N. 15 E.	.20	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 58 W.	.11			
73. Carlshamn.																						
Spring	117	42	93	49	131	107	130	61	191	55	102	46	166	85	130	56	643	S. 11 32 W.	.01½	N. 79½ E.	.07	
Summer	74	14	30	10	62	63	125	81	230	83	163	83	266	113	169	68	447	S. 56 49 W.	.27	S. 58½ W.	.17	
Autumn	80	33	51	51	104	62	163	67	148	55	183	63	223	53	126	38	647	S. 37 30 W.	.14	S. 7½ W.	.05	
Winter	119	76	75	41	93	49	118	86	94	61	179	100	257	114	138	60	487	S. 83 8 W.	.17	N. 65 W.	.10	
The year	390	165	249	151	490	281	536	295	663	254	627	202	912	365	563	222	2224	S. 51 55 W.	.10			
74. Askersund.																						
Spring	160	55	183	60	124	41	109	45	166	44	58	35	237	63	120	22	349	N. 9 42 W.	.05	N. 48 E.	.13	
Summer	101	34	95	35	125	50	96	45	205	59	159	64	388	75	108	12	397	S. 61 41 W.	.20	S. 52½ W.	.09	
Autumn	93	41	123	26	120	40	118	50	205	59	177	61	319	48	116	22	519	S. 53 3 W.	.16	S. 22 W.	.06½	
Winter	149	56	125	42	95	26	103	42	158	42	151	44	282	58	91	24	437	S. 82 35 W.	.11½	N. 4½ W.	.02½	
The year	503	186	526	163	464	157	426	182	734	204	545	204	1226	244	435	80	1702	S. 69 40 W.	.11½			
75. Orebro.																						
Spring	304	61	247	27	101	14	92	7	131	31	460	16	104	3	79	18	492	N. 66 24 W.	.57	N. 19 E.	.12	
Summer	169	30	154	12	137	21	95	15	142	59	598	30	74	10	58	6	569	S. 33 38 W.	.20	S. 10½ W.	.06½	
Autumn	187	33	177	13	99	22	121	16	158	61	521	22	91	14	55	8	568	S. 33 15 W.	.16½	S. 14 E.	.03½	
Winter	244	36	200	10	105	18	107	8	148	43	674	35	110	5	52	10	431	S. 46 48 W.	.19	S. 56 W.	.06	
The year	904	160	778	62	442	75	415	46	579	194	2253	103	379	32	244	42	2060	S. 44 27 W.	.14½			
76. Nos. 74 and 75 combined.																						
Spring	464	116	430	87	225	55	201	52	297	75	518	51	341	66	199	40	841	N. 42 1 W	.05	N. 32 E.	.14	
Summer	270	64	249	47	262	71	191	60	347	118	757	94	462	85	166	18	966	S. 46 48 W.	.19½	S. 33½ W.	.09	
Autumn	280	74	300	39	219	62	239	66	363	120	698	83	410	62	171	30	1087	S. 42 30 W.	.14	S. 10½ E.	.05	
Winter	393	92	325	52	200	44	210	50	306	85	825	79	392	63	143	34	868	S. 59 1 W.	.15	S. 76 W.	.03½	
The year	1407	346	1304	225	906	232	841	228	1313	398	2798	307	1605	276	679	122	3762	S. 54 31 W.	.13			

[1] Computed from the resultants for the seasons.

(Nos. 64 to 90.) **Southern Sweden.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
77. Skara.																						
Spring	186	10	260	3	144	1	49	1	56	17	76	5	261	2	188	11	429	N.14°39′ W.	.22	N. 26½°E.	.12	
Summer	149	11	165	1	106	1	72	10	78	10	232	12	406	5	205	5	393	N.76 12 W.	.25	S. 73½ W.	.12½	
Autumn	196	12	206	2	207	0	93	6	98	46	199	14	297	1	184	7	542	N.52 49 W.	.10½	S. 39 E.	.04	
Winter	100	19	252	1	179	0	50	5	106	47	126	7	322	1	123	6	556	N.48 48 W.	.09	S. 48 E.	.05	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.48 44 W.	.14			
78. Linkoping.																						
Spring	138	41	101	39	139	32	69	28	73	22	106	49	180	62	100	28	166	N.41 31 W.	.10½	N. 50½ E.	.17½	
Summer	149	36	70	23	114	38	109	39	148	25	161	95	432	93	179	18	173	S. 86 58 W.	.28	N. 78 W.	.08	
Autumn	105	15	73	31	70	20	74	17	113	37	149	77	210	29	82	11	226	S. 69 27 W.	.20	S. 17 E.	.04	
Winter	63	23	32	20	54	14	48	31	96	57	127	75	197	38	73	21	225	S. 66 28 W.	.28½	S. 36½ W.	.10	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 25 W.	.20½			
79. Nos. 77 and 78 combined.																						
Spring	324	51	361	42	283	33	118	29	129	39	182	54	441	64	288	39	595	N.25 7 W.	.17	N. 36 E.	.13½	
Summer	298	47	235	24	220	39	181	49	226	35	393	107	838	98	384	23	566	N.85 17 W.	.26½	S. 79 W.	.11½	
Autumn	301	27	279	33	277	20	167	23	211	83	348	91	507	30	266	18	768	N.85 10 W.	.12½	S. 36½ E.	.04½	
Winter	163	42	284	21	233	14	98	36	202	104	253	82	519	39	196	27	781	S. 86 25 W.	.14	S. 11 E.	.05½	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.73 18 W.	.15½			
80. Kalmar.																						
Spring	47	131	347	107	109	51	64	42	109	251	210	134	134	63	96	53	248	S. 36 52 W.	.03	N. 50½ E.	.17½	
Summer	46	125	186	54	92	37	77	58	151	303	323	240	171	67	58	50	146	S. 43 42 W.	.28	S. 31 W.	.08	
Autumn	70	67	151	69	74	99	126	98	138	172	368	179	163	97	106	56	146	S. 40 23 W.	.25	S. 9 W.	.06	
Winter	75	91	136	66	61	39	121	94	107	150	373	230	183	90	139	111	187	S. 63 6 W.	.26½	N. 79½ W.	.08½	
The year	238	414	820	296	336	226	388	292	505	876	1274	783	651	317	399	270	727	S. 48 40 W.	.20			
81. Westervik.																						
Spring	91	43	158	43	67	43	110	51	88	58	67	26	106	36	167	81	642	N. 4 34 W.	.07	N. 64 E.	.13½	
Summer	90	27	116	56	100	44	119	63	168	90	140	37	273	80	203	85	355	S. 80 1 W.	.15	S. 29 W.	.04	
Autumn	98	36	64	29	52	37	112	57	123	86	206	33	207	51	167	101	611	S. 75 44 W.	.17½	S. 38 W.	.07	
Winter	102	34	76	21	39	25	51	42	98	64	182	21	191	61	214	93	591	N.76 29 W.	.19	N. 60 W.	.06½	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.85 7 W.	.12½			
82. Nykoping.																						
Spring	163	84	174	47	357	83	245	70	83	39	37	21	186	32	138	114	35	N.67 16 E.	.23½	N. 81½ E.	.18	
Summer	140	72	127	36	354	89	295	104	56	32	68	25	225	36	168	112	68	N.79 3 E.	.17	S. 75 E.	.03	
Autumn	173	69	170	39	202	59	204	101	135	55	149	42	314	50	218	103	69	N.53 2 W.	.06	S. 72 W.	.09½	
Winter	151	52	160	25	119	31	155	86	123	49	134	43	321	71	297	127	45	N.60 55 W.	.20	N. 81½ W.	.22	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N.31 30 E.	.08			
83. Westeras.																						
Spring	315	119	77	41	48	57	118	97	145	82	159	113	76	44	60	115	266	N.45 54 W.	.06½	N. 45 E.	.10½	
Summer	232	77	57	38	60	62	108	108	185	94	192	192	112	46	57	95	196	S. 53 29 W.	.16	S. 10½ W.	.08	
Autumn	276	52	76	39	64	61	108	78	195	104	201	161	178	47	126	97	304	S. 77 17 W.	.16	S. 73½ W.	.05	
Winter	252	62	65	36	38	90	89	66	125	120	162	129	130	60	73	109	324	S. 86 47 W.	.13	N. 42½ W.	.02	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 79 10 W.	.13			

[1] Computed from the resultants for the seasons.

(Nos. 64 to 90.) **Southern Sweden.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
84. Upsal.																						
Spring	812	24	575	12	217	3	169	3	377	12	397	11	204	6	229	14	246	N. 8°38′ E.	.19	N. 50° E.	.10½	
Summer	760	28	450	15	289	24	183	20	344	34	387	18	268	10	270	25	186	N. 1 7 E.	.15½	N. 59 E.	.07½	
Autumn	645	8	369	8	213	12	122	18	406	63	434	36	340	26	305	39	248	N.52 21 W.	.14	S. 64 W.	.06	
Winter	611	11	357	12	156	16	121	19	406	42	619	32	314	11	305	17	202	N.77 35 W.	.16	S. 49½ W.	.12½	
The year	2828	71	1751	47	875	55	595	60	1533	151	1837	97	1126	53	1109	95	882	N.26 26 W.	.13			
85. Stockholm (1862 to 1866).																						
Spring	123	64	55	145	37	64	27	93	94	98	65	208	64	63	26	82	71	S. 65 44 W.	.08	N. 51½ E.	.12½	
Summer	111	58	27	119	15	80	21	93	125	94	86	276	39	73	17	77	71	S. 51 0 W.	.19½	S. 45½ E.	.02	
Autumn	65	38	25	69	23	67	38	85	120	128	94	250	62	90	30	102	89	S. 51 42 W.	.28	S. 38½ W.	.09	
Winter	61	67	41	59	17	62	30	63	87	102	123	246	95	114	33	67	86	S. 66 17 W.	.24	N. 80 W.	.06	
The year	360	227	148	392	92	273	116	334	426	422	368	980	260	340	106	328	317	S. 58 18 W.	.21			
86. Stockholm (date not known).																						
The year	15	...	11	...	11	...	9	...	12	...	4	...	19	...	9	...	...	N.85 2 W.	.10½	......	...	1461
87. Nos. 83, 84 and 85 combined.																						
Spring	1250	207	707	198	302	124	314	193	616	192	621	332	344	113	317	211	583	N. 8 57 W.	.10	N. 49½ E.	.11	
Summer	1103	163	534	172	364	166	312	221	654	222	665	486	419	129	344	197	453	N.69 5 W.	.07	S. 86 E.	.03	
Autumn	986	98	470	116	300	140	268	181	721	295	729	447	580	163	461	238	641	S. 88 23 W.	.15	S. 59 W.	.06	
Winter	924	140	463	107	211	168	240	148	618	264	904	407	539	185	411	193	612	S. 86 37 W.	.17	S. 61 W.	.08	
The year	4263	608	2174	593	1177	598	1134	743	2609	973	2919	1672	1882	590	1531	839	2289	N.74 30 W.	.10½			
88. Wisby.																						
Spring	118	75	192	78	110	88	155	65	115	78	186	134	144	57	132	48	154	S. 27 12 W.	.03½	N. 68 E.	.10½	
Summer	108	67	154	42	78	63	137	67	122	87	226	172	228	74	163	53	181	S. 70 40 W.	.18½	N. 84 W.	.07	
Autumn	103	47	125	88	103	88	197	108	187	105	202	167	209	94	202	66	109	S. 44 15 W.	.16	S. 4 W.	.05	
Winter	91	59	111	81	98	91	168	79	128	79	189	148	199	99	187	77	79	S. 63 39 W.	.14	N. 71½ W.	.02	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 9 W.	.13			
89. S. W. Sweden.[2]																						
Spring	504	369	860	392	685	347	309	221	611	559	708	330	794	300	441	273	1651	S. 72 9 W.	.01	N. 31 E.	.11	
Summer	405	311	417	209	375	266	303	327	731	907	996	556	1172	448	463	256	1194	S. 57 5 W.	.25½	S. 74½ W.	.16	
Autumn	396	226	528	305	692	391	473	367	761	636	975	389	705	202	342	193	1534	S. 6 16 W.	.15	S. 42½ E.	.08	
Winter	458	247	609	253	709	317	425	295	694	536	927	425	575	230	354	249	1903	S. 13 55 W.	.09½	N. 84½ E.	.04½	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 34 18 W.	.12			
90. S. E. Sweden.[3]																						
Spring	2554	761	2403	649	1618	562	1282	538	1636	767	1856	720	1869	540	1519	674	3799	N. 4 50 W.	.06½	N. 52 E.	.13	
Summer	2121	547	1554	451	1552	563	1424	693	1960	958	2731	1201	2955	733	1706	596	3268	S. 71 8 W.	.14½	S. 43 W.	.04½	
Autumn	2055	440	1572	439	1332	530	1365	648	1937	951	2836	1010	2517	562	1640	628	4356	S. 65 59 W.	.12½	S. 13 W.	.04	
Winter	1998	598	1607	374	1041	421	1064	583	1639	857	2967	1020	2537	687	1680	708	3805	S. 82 35 W.	.16½			
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 82 50 W.	.10½			

[1] Computed from the resultants for the seasons.

[2] Carlstadt, Cronberg, Goteburg, Halmstad, Lund, and Wenersborg.

[3] Askersund, Carlshamn, Kalmar, Linkoping, Nykoping, Orebro, Skara, Stockholm, Upsal, Westeras, Westervik, and Wexio.

(Nos. 91 to 126.) **Russia.**

Observed at the following places, viz.:—

Avandus, on the estate of Admiral Von Lütke, and under his direction, from November, 1857, to October, 1860, inclusive.

Balachna, by Mr. Borissoff, during the years 1857, 1865 and 1866.

Baltischport, during the year 1857.

Cronstadt, during December, 1852, nine months of 1853, and nine months of 1857.

Dorpat, during the years 1842, 1855, 1856, 1857 (except December) and 1859.

Fellin, for 22 years, 1824 to 1846, quoted by Wesselowski from the correspondence of the Society of Natural Sciences at Riga.

Glasof, by Mr. Mischkin, during the years 1865 and 1866.

Gorbatov, during the year 1857.

Gryasovez, during the years 1835 and 1839, quoted by Wesselowski from a work of Danilewski on the climate of the Vologdian regions.

Ichak, during the years 1853 and 1857, by Mr. Gromoff.

Kazan, for one year (date not preserved).

Kosmodemiansk, by Mr. Gromoff, during the years 1865 and 1866.

Kostroma, during the year 1857.

Libau, by Mr. Lesseff, from December, 1864, to November, 1865, inclusive.

Mitau, during the year 1853.

Moscow. Three series of observations are given for this place. The first was made by Perwoschtschikof for 20 years, from 1810 to 1812, and from 1820 to 1836, both inclusive; but Wesselowski, from whose work the series is transcribed, expresses doubts as to the reliability of the results. The second series was made by Spasski for five years, from October, 1839, to September, 1844, inclusive, and published in his work on the climate of Moscow. The third series embraces also a period of five years, neither the date of which nor the name of the observer is preserved.

Nijnii Novogorod, by A. S. Saveliew, at the Gymnasium, for twelve years, 1837 to 1848 inclusive.

Nijnii Taguilsk. The first series, embracing a period of nine years, 1843 to 1851, inclusive, was originally recorded for sixteen points of the compass, but was reduced to eight points by Wesselowski, from whose work the series is transcribed, by distributing those for intermediate points equally between the two adjacent ones, *i. e.*, by putting $\frac{1}{2}$ N. N. W. + N. + $\frac{1}{2}$ N. N. E. = North, etc. The second series is added chiefly for the purpose of showing the relative number of calms, as indicated by the observations for the seasons of the year 1853, and for the years 1848 and 1849 in the aggregate.

Novogorod, by Lesnewski, during the years 1852, 1853, 1854, 1855 and 1857.

Pakerort Lighthouse, during the year 1866, by Orloff.

Reval, by Sheferdeker, for 33 years, 1815 to 1848. For the first seven years they were made on the estates of the parish of St. Catherine, and for the remaining years within the city of Reval. By combining with the foregoing the observations for the year 1853, and nine months of 1857, and assuming that the proportion of calms for the former series, where no record of them is given by Wesselowski, from whose work the series is copied, was the same relatively as in the two latter years, of which we have the record, a second series of results for the seasons and year has been obtained.

Riga, by Dr. Leters, for a period of seven years, from 1842 to 1848, inclusive. The second series is obtained by combining with the foregoing the observations for the year 1853, and three months of 1850.

St. Petersburg. The first series embraces observations for a period of 23 years, viz., for 13 years (1822 to 1834 inclusive), by Wischnewski, at 7 A. M., 2 P. M. and 9 P. M.; and for 10 years (1841 to 1850 inclusive), hourly at the Observatory of the Institute of Mining Engineers. The second series gives the results for the several hours of the day for the ten years last mentioned, and includes calms, which are omitted in the first series. The third series gives the results for the years 1830, 1831 and 1832, and from July, 1835, to June, 1837, inclusive, computed from hourly observations, and includes calms. The fourth series embraces the third together with the year 1857. To these are appended results for the years 1783 and 1818, and for 20 years of unknown date; also a table

(Nos. 91 to 126.) **Russia.**—*Continued.*

prepared by Mr. Wesselowski to show how the mean direction of the wind at 7 o'clock A.M., 2 P.M. and 9 P. M. differs from that for the entire 24 hours of the day in the different months of the year.

Slobodsk, during the years 1857, 1865 and 1866, by Mr. Koroboff.

Syevernaja Utschebnaja-Ferma (Northern Agricultural School), for a period of nine years, 1847 to 1855 inclusive.

Totma, from May, 1848, to December, 1850, inclusive, quoted by Wesselowski from Danilewski, as above.

Tschermoski, District of Perm, 1865, 1866 and 1867, by Dr. Goworliwi.

Viatka, during the year 1857.

Vladimir, by Dubenski, for a period of nineteen years, from 1832 to 1850 inclusive, quoted by Wesselowski.

Vologda. The first series embraces a period of 3½ years, 1844 to 1847, quoted by Wesselowski from Danilewski. The second for the summer and autumn of 1850 is added for the purpose of showing the relative number of calms, of which there is no record in the first series. The third is computed from the first and second, due allowance being made for calms.

Zlatouste. The first series embraces a period of four years, from December, 1849, to November, 1853, inclusive. The second is derived from observations made in the years 1837, 1850, 1853 and 1857, and includes calms. The third is a combination of the other two, due allowance being made for calms.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
91. Libau.	Spring	17	13	47	20	28	51	38	28	34	S. 36° 9′ W.	.14½	N. 9° W.	.02	
	Summer	22	8	19	4	28	57	43	38	57	S. 78 39 W.	.30½	N. 69 W.	.23	
	Autumn	10	10	42	20	42	35	27	23	64	S. 5 46 W.	.17½	S. 62 E.	.07	
	Winter	4	26	57	29	51	38	31	24	10	S. 19 38 E.	.23	S. 64½ E.	.18	
	The year	53	57	165	73	149	181	139	113	165	S. 30 2 W.	.16			
92. Pakerort.	Spring	12	35	38	30	19	57	20	46	19	S. 38 17 W.	.05	N. 16 E.	.14½	
	Summer	13	32	45	22	37	44	13	35	23	S. 31 35 E.	.10	N. 52½ E.	.15½	
	Autumn	16	11	12	37	57	57	29	41	4	S. 36 31 W.	.33	S. 55 W.	.15	
	Winter	20	14	18	52	38	86	16	25	1	S. 18 42 W.	.34½	S. 15 W.	.15½	
	The year	61	92	113	141	151	244	78	147	47	S. 21 19 W.	.19½			
93. Mitau.	Spring	27	7	15	4	13	13	5	8	...	N. 13 6 E.	.14	N. 21½ E.	.24	92
	Summer	16	18	4	4	3	10	30	6	...	N. 47 19 W.	.32½	N. 31 W.	.35½	92
	Autumn	6	10	5	15	19	20	9	7	...	S. 11 52 W.	.29	S. 1½ W.	.20	91
	Winter	2	7	11	17	23	17	10	3	...	S. 5 45 E.	.42½	S. 16 E.	.35	90
	The year	51	42	35	40	58	60	54	24	...	S. 32 50 W.	.10			
94. Riga, 1842–1848[1]	January	1152	599	1014	2627	1935	1152	1382	138	...	S. 18 44 E.	.31	S. 31½ E.	.30	217
	February	1919	656	656	1364	1869	960	1768	808	...	S. 59 28 W.	.11	S. 67 W.	.04	198
	March	2442	461	783	1567	1797	968	1152	829	...	S. 42 28 W.	.03	N. 66 E.	.04	217
	April	3905	333	1190	714	1143	476	1000	1238	...	N. 5 13 W.	.30½	N. 5 E.	.34½	210
	May	4055	369	369	876	922	645	829	1935	...	N. 20 45 W.	.39	N. 11 W.	.41	217
	June	3000	619	286	619	905	952	1810	1810	...	N. 43 52 W.	.37	N. 32½ W.	.36½	210
	July	2673	369	1014	783	922	1198	1751	1290	...	N. 47 38 W.	.23	N. 30 W.	.22½	217
	August	2350	415	829	1244	1751	829	1382	1198	...	N. 71 8 W.	.09	N. 20½ W.	.07	217
	September	1762	476	857	1333	2333	857	1524	857	...	S. 27 9 W.	.13	S. 0½ W.	.07½	210
	October	1106	415	829	2350	3133	876	1106	184	...	S. 13 20 E.	.40	S. 23 E.	.38	217
	November	762	381	952	1571	3667	714	1429	524	...	S. 0 20 E.	.39	S. 10 E.	.35	210
	December	1336	415	1336	1244	2166	1014	1751	737	...	S. 16 38 W.	.17	S. 5 E.	.12½	217
	Spring	3467	388	781	1052	1287	696	994	1334	..	N. 16 9 W.	.22½	......	...	644
	Summer	2674	468	710	882	1193	993	1648	1433	...	N. 48 27 W.	.22½	......	...	644
	Autumn	1210	424	879	1751	3044	816	1353	522	...	S. 2 9 E.	.30	......	...	637
	Winter	1469	557	1002	1745	1990	1042	1634	561	...	S. 4 49 W.	.17	......	...	632
	The year	2205	459	843	1358	1879	887	1407	962	...	S. 66 51 W.	.06½	......	...	2557

[1] Transcribed from Wesselowski, except the last four columns.

(Nos. 91 to 126.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
95. Riga, 1842 to 1848, 1850, and 1853.	Spring	23788	3294	5421	8663	9574	5274	6590	10878	...	N. 16° 3′ W.	.20½	S. 1½° E.	.16	736
	Summer	19190	3509	4764	6870	8469	7683	11594	11412	...	N. 49 48 W.	.22½	N. 31 W.	.21½	736
	Autumn	9379	3426	6551	15756	24369	7546	10498	4856	...	S. 1 56 E.	.31	S. 13 E.	.28	819
	Winter	9743	3981	7041	13818	15893	7499	11404	3906	...	S. 0 40 E.	.18½	S. 23 E.	.16	722
	The year[3]	......	...	...	......	......	......	......	......	...	S. 55 46 W.	.07	......	...	3013
96. Mitau and Riga combined.[1]	Spring	265	40	69	91	109	66	71	117	...	N. 13 57 W.	.19	N. 1½ E.	.24	828
	Summer	208	53	52	73	88	87	146	120	...	N. 49 31 W.	.24	N. 30½ W.	.30½	827
	Autumn	99	44	70	172	262	95	113	55	...	S. 0 45 E.	.31	S. 13 E.	.27	910
	Winter	98	46	80	153	180	91	122	42	...	S. 1 23 E.	.24	S. 18 E.	.19½	812
	The year[3]	......	...	...	......	......	......	......	......	...	S. 47 43 W.	.07½	......	...	3377
97. Baltischport.	Spring	46	41	109	7	71	16	25	23	30	N. 56 51 E.	.27	N. 61 E.	.33½	92
	Summer	69	47	28	6	35	18	88	56	21	N. 39 47 W.	.32	N. 27½ W.	.29½	92
	Autumn	31	18	55	12	65	49	81	12	27	S. 40 36 W.	.21	S. 25 W.	.15	91
	Winter	33	4	48	17	84	75	66	17	16	S. 33 59 W.	.34	S. 24 W.	.29	90
	The year	179	110	240	42	255	158	260	108	94	S. 77 38 W.	.07	......	...	365
98. Reval. 1815 to 1848.[2]	January	665	936	924	1650	1517	2707	1020	581	...	S. 11 41 W.	.27			
	February	728	1143	895	1007	1799	2544	1096	788	...	S. 25 0 W.	.23			
	March	883	1288	1024	1113	1243	2215	1035	1199	...	S. 37 12 W.	.10			
	April	1547	1686	905	1016	1074	1224	943	1605	...	N. 5 59 W.	.10			
	May	1523	2211	625	451	614	1050	920	2606	..	N. 17 3 W.	.28			
	June	1188	1757	404	450	375	1531	1106	3189	...	N. 40 26 W.	.32			
	July	1194	1760	517	653	517	1822	1206	2331	...	N. 24 9 W.	.17			
	August	1047	1305	583	769	852	2296	1316	1832	...	N. 83 33 W.	.18½			
	September	1093	990	594	1291	1327	2586	1014	1105	...	S. 43 31 W.	.19			
	October	966	601	448	1392	1563	3131	933	966	...	S. 36 17 W.	.29			
	November	881	735	670	1236	1636	3168	735	939	...	S. 30 20 W.	.29½			
	December	949	738	574	1545	1796	2602	1102	694	...	S. 24 14 W.	.28½			
	Spring	1318	1728	851	860	977	1496	966	1803	...	N. 27 46 W.	.09			
	Summer	1143	1607	501	624	581	1883	1209	2451	...	N. 52 55 W.	.23			
	Autumn	980	775	571	1306	1509	2962	894	1003	...	S. 35 51 W.	.25			
	Winter	781	939	798	1401	1704	2618	1073	688	...	S. 20 7 W.	.26			
	The year	1055	1262	680	1048	1193	2240	1035	1486	...	S. 69 2 W.	.12½			
98. Reval. 1815 to 1848, 1853 & 1857.	Spring	4221	5693	2690	2884	3051	4621	3018	5574	6792	N. 21 2 W.	.11	N. 25 E.	.17	
	Summer	3697	5106	1620	1996	1860	5865	3956	7708	5854	N. 52 19 W.	.23½	N. 20 W.	.21	
	Autumn	3124	2474	1892	4203	4914	9249	2874	3162	4251	S. 34 33 W.	.24½	S. 10 W.	.16	
	Winter	2418	2905	2489	4390	5456	8025	3242	2083	2072	S. 18 18 W.	.26	S. 9 W.	.20	
	The year[3]	......	...	...	......	......	......	......	......	...	S. 64 29 W.	.12			
99. Fellin.	The year[3]	959	192	1370	1096	1260	2767	1972	383	...	S. 36 8 W.	.32½			
100. Avandus.	Spring	1213	489	726	1517	1373	1335	1217	1130	...	S. 38 26 W.	.15	S. 87½ E.	.18½	276
	Summer	1550	331	562	890	1022	1913	1611	1121	...	S. 79 37 W.	.27	N. 8½ E.	.07	276
	Autumn	510	461	534	782	1101	2065	2010	1464	...	S. 68 8 W.	.39	S. 71½ W.	.09	273
	Winter	750	273	305	1074	1104	1892	2449	1153	...	S. 66 40 W.	.40½	S. 64½ W.	.10	271
	The year	4023	1554	2127	4263	4600	7205	7287	4868	...	S. 66 37 W.	.30	......	...	1096
101. Dorpat.	Spring	221	262	274	294	175	269	309	258	103	N. 42 54 W.	.01	N. 61 E.	.15½	368
	Summer	206	190	144	137½	136½	257	295	284	128	N. 67 28 W.	.18	N. 22 W.	.16½	307
	Autumn	155	126	159	243	239	368½	391	220½	100	S. 30 8 W.	.16	S. 24 E.	.11	364
	Winter	121	155	162	243	224	432	438	214	108	S. 54 40 W.	.26	S. 44½ W.	.16½	357
	The year	803	822	840	1044½	931½	1500½	1658	1098½	439	S. 66 55 W.	.16	......	...	1761
102. Cronstadt.	Spring	43	62	85	33	12	14	94	20	97	N. 31 56 E.	.14	N. 29 E.	.21½	153
	Summer	41	33	57	3	26	39	150	32	81	N. 75 8 W.	.26	N. 58½ W.	.26	154
	Autumn	50	20	68	37	87	85	93	31	65	S. 37 24 W.	.21	S. 45 W.	.14	182
	Winter	11	21	57	41	55	42	13	10	20	S. 32 19 E.	.35	S. 45 E.	.31	180
	The year[3]	......	...	...	......	......	......	......	......	...	S. 23 12 W.	.07½	......	...	669

[1] Giving to the observations at each place a weight proportional to the length of time covered by them respectively.
[2] Transcribed from Wesselowski, except the last four columns. His ratios of resultants have been modified by making a due allowance for calms, as indicated by the observations in 1853 and 1857.
[3] Computed from the resultants for the seasons.

(Nos. 91 to 126.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
103. St. Petersburg. 1822 to 34, and 1841 to 50.[1]	January	369	1066	1054	1905	1446	2090	1667	403	...	S. 5° 35′ W.	.26			
	February	479	1105	842	1537	1687	2413	1710	227	...	S. 15 54 W.	.31			
	March	713	1514	750	1609	1496	1991	1585	341	...	S. 8 0 W.	.19			
	April	808	2047	1178	1202	1231	1545	1624	364	...	S. 36 47 E.	.07½			
	May	814	2424	856	860	752	1317	2585	391	...	N. 50 54 W.	.07			
	June	728	1834	961	771	660	1573	2933	541	...	N. 86 51 W.	.15			
	July	624	2047	918	846	739	1947	2492	387	...	S. 72 48 W.	.11½			
	August	368	1493	1167	1489	1153	1850	2109	371	...	S. 12 42 W.	.16½			
	Sept'mber	713	1433	823	1345	1347	2115	1566	658	...	S. 24 55 W.	.16			
	October	601	922	614	1623	1877	2508	1149	706	...	S. 18 20 W.	.30½			
	November	526	934	718	1582	2055	2558	1097	530	...	S. 12 54 W.	.33			
	December	392	786	977	1830	2058	2064	1366	527	...	S. 6 6 W.	.32			
	Spring	778	1995	928	1224	1159	1618	1932	365	...	S. 10 57 W.	.07			
	Summer	573	1791	1015	1035	851	1790	2511	433	...	S. 56 57 W.	.12			
	Autumn	613	1096	718	1517	1760	2394	1271	631	...	S. 17 27 W.	.25½			
	Winter	414	986	958	1757	1730	2188	1581	386	...	S. 9 12 W.	.29			
	The year	594	1467	904	1383	1375	1998	1824	454	...	S. 19 35 W.	.17½			
Hours, 1841 to 1850.	Noon	604	1172	755	1545	1205	1205	1957	494	1064	S. 19 48 W.	.14½			
	1 P. M.	617	1238	659	1600	1106	1199	2135	513	933	S. 29 22 W.	.14			
	2 "	620	1260	659	1600	1081	1177	2195	530	878	S. 32 19 W.	.13½			
	3 "	620	1314	634	1556	1059	1133	2179	560	944	S. 35 32 W.	.12½			
	4 "	571	1325	631	1578	1026	1084	2171	582	1032	S. 34 26 W.	.12			
	5 "	579	1364	636	1529	958	1037	2097	557	1243	S. 33 35 W.	.10			
	6 "	563	1400	667	1509	925	1010	1965	579	1383	S. 26 49 W.	.08½			
	7 "	557	1342	689	1493	886	1024	1808	571	1630	S. 18 28 W.	.08			
	8 "	491	1303	719	1479	895	1013	1638	527	1935	S. 3 16 W.	.08½			
	9 "	458	1232	724	1443	867	1048	1380	502	2344	S. 7 59 E.	.09½			
	10 "	412	1161	741	1419	840	1076	1240	475	2637	S. 12 8 E.	.10½			
	11 "	417	1092	727	1386	851	1065	1136	461	2865	S. 13 37 E.	.11			
	Midnight	384	1092	744	1347	859	1114	1089	439	2931	S. 13 44 E.	.12			
	1 A. M.	387	1040	746	1347	870	1117	1048	442	3002	S. 13 21 E.	.12			
	2 "	395	1026	755	1367	859	1166	1054	442	2936	S. 11 42 E.	.12½			
	3 "	403	1010	774	1375	889	1155	1035	450	2909	S. 13 0 E.	.12½			
	4 "	436	1024	777	1383	917	1207	1057	491	2709	S. 9 56 E.	.12½			
	5 "	469	1035	826	1432	928	1221	1059	516	2514	S. 12 43 E.	.12½			
	6 "	508	1081	804	1468	988	1265	1089	510	2286	S. 11 21 E.	.13			
	7 "	538	1136	804	1550	1010	1238	1202	538	1984	S. 10 48 E.	.13			
	8 "	554	1158	812	1556	1054	1232	1336	524	1773	S. 6 33 E.	.13			
	9 "	552	1180	818	1548	1054	1298	1468	524	1559	S. 0 42 E.	.13			
	10 "	549	1199	785	1611	1109	1262	1671	502	1312	S. 6 21 E.	.14			
	11 "	563	1188	782	1600	1153	1240	1808	513	1153	S. 11 28 W.	.14			
1830, '1, '2, '5, '6 and '7.	January	137	397	91	353	503	1163	609	130	334	S. 40 16 W.	.38	......	...	155
	February	140	348	155	661	470	1033	472	50	85	S. 16 48 W.	.38	......	...	142
	March	74	595	222	629	708	925	300	27	240	S. 5 03 E.	.35	......	...	155
	April	43	784	350	462	394	867	334	9	357	S. 20 49 E.	.22	......	...	150
	May	226	954	209	267	215	739	623	161	326	S. 65 49 W.	.06	......	...	155
	June	146	980	312	234	263	537	728	99	298	S. 4 7 W.	.03	......	...	150
	July	276	628	218	330	271	859	742	149	247	S. 62 54 W.	.17	......	...	155
	August	167	671	252	399	308	700	609	174	440	S. 34 23 W.	.10¼	......	...	155
	September	282	637	260	267	432	801	473	112	336	S. 30 17 W.	.12	......	...	150
	October	200	398	383	552	594	1057	266	99	171	S. 1 52 W.	.32	......	...	155
	November	192	416	404	599	786	710	160	114	219	S. 18 19 E.	.35	......	...	150
	December	106	405	298	426	1052	595	343	195	294	S. 1 13 W.	.33½	......	...	155
1830, '31, '32, '35, '36, '37 and '57.	Spring	631	2606	916	1600	1540	2735	1645	334	1031	S. 2 16 E.	.14	N. 69½° E.	.08	552
	Summer	831	2693	929	1047	877	2198	2880	598	1192	S. 89 24 W.	.10	N. 10½ W.	.16½	552
	Autumn	848	1550	1184	1586	1990	2951	1442	486	1067	S. 9 12 W.	.23	S. 29½ E.	.06	546
	Winter	443	1385	627	1589	2155	3367	1949	439	1043	S. 25 56 W.	.34	S. 30 W.	.15	542
	The year	2753	8234	3656	5822	6562	11251	7916	1857	4333	S. 22 19 W.	.18	......	...	2192
1818.	The year	27	36	51	24	34	32	124	22	15	S. 85 21 W.	.19	......	...	365
20 years, date unknown.	The year	852	772	961	680	835	905	1292	1009	...	N. 67 30 W.	.10	......	...	7305
1783.	The year	39	21	55	24	71	18	80	40	...	S. 61 29 W.	.11	......	...	348

[1] Transcribed from Wesselowski, except the last four columns. His ratios of the resultants have been modified by making a due allowance for calms.

(Nos. 91 to 126.) **Russia.**—*Continued.*

St. Petersburg.	January.	February.	March.	April.	May.	June.	July.
7 A.M., 2 P.M., 9 P.M. Hourly	S. 12°13′ E. S. 12 20 E.	S. 2° 30′ W. S. 1 22 W.	S. 45°54′ E. S. 47 33 E.	N. 60°20′ E. N. 64 19 E.	N. 29°30′ W. N. 24 26 W.	N. 85°52′ W. N. 87 45 W.	N. 67°37′ W. N. 73 3 W.
Difference	0 7	1 8	1 39	3 59	5 4	1 53	5 26

St. Petersburg.	August.	September.	October.	November.	December.	The year.
7 A.M., 2 P.M., 9 P.M. Hourly	S. 12°53′ W. S. 8 22 W.	S. 6° 5′ W. S. 6 6 W.	S. 6° 31′ E. S. 8 17 E.	S. 4° 5′ W. S. 0 32 W.	S. 13°10′ E. S. 13 1 E.	S. 6° 42′ W. S. 4 35 W.
Difference	4 31	0 1	1 46	3 33	0 9	2 7

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
104. Nos. 102 and 103 combined.	Spring	655	1659	902	1003	895	1314	1598	312	899	S. 4°19′ E.	.05	N. 38° E.	.12	2821
	Summer	556	1465	871	735	677	1421	2254	420	871	S. 74 37 W.	.12	N. $27\frac{1}{2}$ W.	.13	2822
	Autumn	608	884	765	1182	1522	2000	1190	517	807	S. 18 54 W.	.24	S. $13\frac{1}{2}$ W.	.08	2821
	Winter	326	803	800	1333	1429	1805	1192	307	669	S. 8 27 W.	.30	S. 14 E.	.14	2797
	The year	2211	4868	3444	4301	4628	6590	6438	1618	3261	S. 21 31 W.	$.16\frac{1}{2}$	......	...	11974
105. Novogorod.	Spring	91	60	47	33	136	59	108	86	...	S. 86 1 W.	.16	N. $6\frac{1}{2}$ W.	.08	460
	Summer	135	66	48	31	124	37	112	83	...	N. 49 37 W.	.16	N. $17\frac{1}{2}$ E.	$.19\frac{1}{2}$	460
	Autumn	55	39	34	33	171	91	96	62	...	S. 42 3 W.	.31	S. $22\frac{1}{2}$ W.	$.14\frac{1}{2}$	455
	Winter	45	41	50	46	150	86	59	69	...	S. 25 20 W.	.25	S. $17\frac{1}{2}$ E.	$.13\frac{1}{2}$	451
	The year	326	206	179	143	581	273	375	300	...	S. 59 14 W.	.17	......	...	1826
106. Witenewo.	Spring	9	10	19	32	28	28	28	11	111	S. 8 26 W.?	.17	S. 35 E.	$.22\frac{1}{2}$	92
	Summer	29	27	8	2	7	16	17	34	136	N. 24 52 W.?	$.20\frac{1}{2}$	N. 19 E.	$.08\frac{1}{2}$	92
	Autumn	16	22	7	5	2	47	37	43	94	N. 72 43 W.?	.28	N. $82\frac{1}{2}$ W.	$.13\frac{1}{2}$	91
	Winter	10	11	8	13	15	32	41	24	116	N. 87 52 W.?	.21	S. 80 W.	$.05\frac{1}{2}$	90
	The year	64	70	42	52	52	123	123	112	457	N. 83 59 W.	.15	......	...	365
107. Moscow. 1810 to 1812, and 1820 to 1836.[1]	January	1090	654	974	1017	1425	1948	1628	1264	...	S. 58 20 W.	$.20\frac{1}{2}$	S. $42\frac{1}{2}$ W.	$.07\frac{1}{2}$	620
	February	1088	737	905	1608	1072	1357	2027	1206	...	S. 61 1 W.	.25	S. $53\frac{1}{2}$ W.	$.10\frac{1}{2}$	566
	March	856	650	966	1648	2060	1395	1141	1284	...	S. 12 36 W.	$.20\frac{1}{2}$	S. 32 E.	$.16\frac{1}{2}$	620
	April	1015	785	1277	1492	1508	1431	1215	1277	...	S. 12 26 W.	.11	S. $66\frac{1}{2}$ E.	.12	600
	May	1506	1260	766	896	1286	1052	1662	1572	...	N. 55 27 W.	.15	N. $3\frac{1}{2}$ E.	$.14\frac{1}{2}$	620
	June	1401	1228	911	845	1229	1533	1519	1334	...	N. 75 32 W.	.12	N. $10\frac{1}{4}$ E.	.09	600
	July	1402	1000	948	974	1221	1675	1377	1403	...	N. 73 39 W.	$.12\frac{1}{2}$	N. 7 E.	$.09\frac{1}{2}$	620
	August	1466	871	972	973	1161	1480	1597	1480	...	N. 80 39 W.	$.14\frac{1}{2}$	N. 8 W.	.08	620
	September	1348	1092	1027	1011	1348	1268	1429	1477	...	N. 76 31 W.	.09	N. $28\frac{1}{2}$ E.	.09	600
	October	1168	558	744	1083	1591	2081	1743	1032	...	S. 64 9 W.	.12	N. 79 E.	$.02\frac{1}{2}$	620
	November	916	486	601	1030	1788	1903	2046	1230	...	S. 56 12 W.	.31	S. $47\frac{1}{2}$ W.	.17	600
	December	931	886	1049	960	1403	1418	1861	1492	...	S. 73 13 W.	$.16\frac{1}{2}$	N. $66\frac{1}{2}$ W.	$.02\frac{1}{2}$	620
	Spring	1126	898	1003	1345	1618	1293	1339	1378	...	S. 40 27 W.	.10	S. $75\frac{3}{4}$ E.	.07	1840
	Summer	1423	1033	944	931	1204	1563	1498	1406	...	N. 81 50 W.	.13	N. $3\frac{1}{2}$ E.	$.07\frac{1}{2}$	1840
	Autumn	1144	712	791	1041	1576	1751	1739	1246	...	S. 60 49 W.	.21	S. $48\frac{1}{2}$ W.	$.06\frac{1}{2}$	1820
	Winter	1036	759	976	1195	1300	1574	1839	1321	...	S. 63 52 W.	.17	S. 48 W.	$.02\frac{1}{2}$	1806
	The year	1182	851	928	1128	1424	1545	1604	1338	...	S. 66 4 W.	$.14\frac{1}{2}$	......	...	7306
107. Moscow. 1839–1844	Spring	137	83	54	155	153	149	109	161	...	S. 61 0 W.	.12	N. 11 E.	.05	460
	Summer	113	97	69	117	133	169	125	177	...	S. 79 0 W.	.15	N. $23\frac{1}{2}$ W.	$.08\frac{1}{2}$	460
	Autumn	84	121	40	140	196	192	112	114	...	S. 30 0 W.	.21	S. $6\frac{1}{2}$ E.	.08	455
	Winter	67	91	64	176	173	171	112	147	...	S. 25 0 W.	.20	S. 20 E.	$.08\frac{1}{2}$	452
	The year	103	98	57	145	162	169	115	151	...	S. 47 0 W.	$.15\frac{1}{2}$	......	...	1827
107. Moscow.	5 years of uncertain date	256	358	816	367	549	383	541	333	...	N. 57 33 W.	.07	......	...	1826

[1] Transcribed from Wesselowski, except the last four columns.

(Nos. 91 to 126.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
108. Syevermaja.[1] Ferma (North Agricultural School).	January	505	264	312	481	1106	1462	1274	1995	...	S. 64° 49′ W.	.52	S. 75½° W.	.24	279
	February	568	1000	114	1068	2295	3455	545	955	...	S. 30 26 W.	.41	S. 9½ E.	.19	254
	March	326	1333	652	1837	1393	2252	1037	1170	...	S. 14 27 W.	.22½	S. 74 E.	.19½	279
	April	853	1455	836	1522	736	2374	1204	1020	...	S. 36 56 W.	.11	N. 67 E.	.19	270
	May	920	1644	754	965	965	2489	860	1403	...	S. 71 48 W.	.10½	N. 47½ E.	.19½	279
	June	604	1305	473	865	669	2871	1550	1663	...	S. 77 34 W.	.28	N. 17½ W.	.11	270
	July	723	2202	852	884	660	1929	1045	1704	...	N. 34 49 W.	.10	N. 36½ E.	.30½	279
	August	673	943	623	657	1111	3350	1330	1313	...	S. 59 44 W.	.33	S. 85½ W.	.04½	279
	September	825	876	303	724	1363	2912	1178	1818	...	S. 68 40 W.	.33	N. 58 W.	.08	270
	October	197	803	379	636	1667	3303	1712	1303	...	S. 52 12 W.	.45	S. 45 W.	.16	279
	November	465	881	433	993	1106	3654	1442	1026	...	S. 49 17 W.	.39	S. 31 W.	.10½	270
	December	516	300	300	733	1167	3683	1933	1367	...	S. 59 55 W.	.51½	S. 65 W.	.22½	279
	Spring	700	1477	747	1441	1031	2372	1034	1198	...	S. 33 24 W.	.13½	N. 74 E.	.17½	828
	Summer	667	1483	649	802	813	2717	1308	1560	...	S. 76 51 W.	.21	N. 18½ E.	.12	828
	Autumn	496	853	372	784	1379	3290	1444	1382	...	S. 55 49 W.	.38½	S. 54 W.	.09½	819
	Winter	530	521	242	761	1523	3733	1251	1439	...	S. 53 27 W.	.46½	S. 49 W.	.17½	812
	The year	598	1084	503	947	1186	3028	1259	1395	...	S. 56 4 W.	.29	......	...	3287
109. Wologda. 1844–1847	Spring	1155	1046	968	2058	847	1807	633	1487	...	S. 17 55 E.	.06½	......	...	?
	Summer	1312	1280	1193	1030	1085	1595	1040	1465	...	N. 50 6 W.	.05	......	...	?
	Autumn	1172	1207	580	1240	827	2526	1040	1408	...	S. 72 56 W.	.15½	......	...	?
	Winter	719	627	918	2154	1118	1745	1473	1246	...	S. 21 7 W.	.19½	......	...	?
	The year	1084	1032	918	1635	971	1910	1049	1401	...	S. 41 10 W.	.09	......	...	1278
1850	J'ly & Aug.	10	0	3	26	12	24	24	8	73	S. 38 32 W.	.22½	......	...	62
	Autumn	12	2	11	34	78	33	45	8	141	S 19 20 W.	.31	......	...	91
Two preceding comb'd	Summer	...	...	...	...	...	...	...	...	...	S. 71 46 W.	.06½	......	...	?
	Autumn	...	...	...	...	...	...	...	...	...	S. 52 1 W.	.18	......	...	?
	The year	...	...	...	...	...	...	...	...	...	S. 34 4 W.	.11	......	...	1431
110. Gryasovez.	Spring	102	134	33	221	143	211	68	88	...	S. 1 24 E.	.19	S. 39½ E.	.08½	184
	Summer	127	177	64	165	48	144	122	153	...	N. 74 24 W.	.10	N. 17 W.	.16	184
	Autumn	86	136	62	173	78	259	90	116	...	S. 32 3 W.	.14	N. 86¾ W.	.02½	182
	Winter	74	90	46	169	163	296	66	96	...	S. 22 13 W.	.31	S.22 11W.	.18	180
	The year	97	134	52	182	108	228	86	113	...	S. 22 16 W.	.13½	......	...	730
111. Vladimir.	January	1548	548	774	742	1871	1548	2097	871	...	S. 66 6 W.	.23	S. 67½ E.	.05½	589
	February	1295	251	540	863	2482	1295	2014	1259	...	S. 56 35 W.	.30	S. 3½ E.	.10	537
	March	754	478	573	1338	1815	1783	1815	1433	...	S. 49 31 W.	.29½	S. 14 E.	.13	589
	April	1456	777	615	1100	1618	1100	1974	1360	...	S. 83 21 W.	.18	N. 61½ E.	.09	570
	May	1473	680	538	737	1303	1332	2096	1841	...	N. 80 4 W.	.28½	N. 10½ W.	.11½	589
	June	1346	612	459	612	917	1835	2660	1560	...	N. 86 26 W.	.37½	N. 52½ W.	.14½	570
	July	1457	486	628	886	1200	1200	2943	1200	...	S. 89 30 W.	.30½	N. 36 W.	.08	589
	August	2089	791	565	989	989	1102	2062	1412	...	N. 59 42 W.	.23½	N. 17 E.	.19	589
	September	1495	966	405	717	1153	1464	2554	1246	...	N. 82 48 W.	.29	N. 16½ W.	.10½	570
	October	1094	608	547	608	2097	1702	2036	1307	...	S. 65 5 W.	.30½	S. 16½ W.	.06½	589
	November	1029	322	322	932	2315	2122	1961	997	...	S. 49 39 W.	.39	S. 11½ W.	.19	570
	December	1568	359	490	1144	2157	1046	2288	948	...	S. 60 28 W.	.24½	S. 39½ E.	.07	589
	Spring	1231	645	575	1058	1579	1405	1962	1545	...	S. 76 35 W.	.23½	N. 75½ E.	.03	1748
	Summer	1631	630	551	829	1035	1379	2555	1391	...	N. 81 2 W.	.30	N. 18½ W.	.12	1748
	Autumn	1206	632	425	752	1855	1763	2184	1183	...	S. 68 13 W.	.31	S. 32½ W.	.06	1729
	Winter	1470	386	601	916	2170	1296	2133	1026	...	S. 60 40 W.	.26	S. 25½ E.	.07	1715
	The year	1385	573	538	889	1660	1461	2208	1286	...	S. 76 26 W.	.26½	......	...	6940
112. Kostroma.	Spring	44	14	35	41	42	19	27	35	19	S. 56 24 E.	.04	N. 51 E.	.09	92
	Summer	80	14	20	32	22	27	19	36	26	N. 12 3 W.	.19	N. ¼ W.	.27	92
	Autumn	12	4	6	46	36	51	51	52	15	S. 38 43 W.	.25	S. 46 W.	.16½	91
	Winter	9	2	17	29	45	20	12	20	14	S. 1 27 W.	.33	S. 7½ E.	.25	56
	The year[2]	...	...	...	...	...	...	...	...	...	S. 25 35 W.	.09	......		331

[1] Transcribed from Wesselowski, except the last four columns.

[2] Computed from the resultants for the seasons.

(Nos. 91 to 126.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
113. Totma.	Spr.	199	81	234	42	115	95	119	115	...	N. 23° 3′ E.	.13½	N.48¾°E.	.23	215
	Sum.	110	43	138	63	150	142	263	91	...	S. 67 13 W.	.23	S. 56 W.	.11½	276
	Aut.	160	95	116	78	207	86	118	140	...	N. 4 38 W.	.04	N.60 E.	.13½	273
	Win.	99	54	82	73	160	210	173	149	...	S. 65 15 W.	.28	S. 56 W.	.16½	211
	Year	140	68	140	65	161	131	173	122	...	S. 77 50 W.	.12	......	...	975
114. Gorbatov.	Spr.	20	48	28	58	25	66	23	40	60	S. 9 19 E.	.08½	N.79½ E.	.30½	92
	Sum.	12	10	0	5	14	46	71	43	167	S. 89 44 W.	.34	N.21 W.	.15	92
	Aut.	20	0	4	4	21	105	123	60	26	S. 74 59 W.	.38	N.61½ W.	.09	91
	Win.	8	16	14	64	45	135	19	38	21	S. 26 54 W.	.43	S. 21 E.	.26	90
	Year	60	74	46	131	105	352	236	181	274	S. 63 57 W.	.32	......	...	365
115. Balachna.	Spr.	29	82	52	70	29	257	300	97	96	S. 75 1 W.	.40	S. 54½ W.	.10	
	Sum.	72	128	25	100	90	190	132	109	166	S. 70 34 W.	.16½	S. 86 E.	.15	
	Aut.	89	63	7	49	28	245	88	254	178	N. 77 43 W.	.36	N.21 W.	.13	
	Win.	50	66	71	60	40	264	230	100	109	S. 72 44 W.	.35	S. 21 W.	.06	
	Year	240	339	155	279	187	956	750	560	549	S. 81 28 W.	.31			
116. North Central Russia,[1] longitude 40°–45° E.	Spr.	2780	2050	1925	3548	2780	3860	3132	3407	175	S. 58 59 W.	.12	N.84 E.	.06	
	Sum.	3354	2282	1994	2250	2456	3547	4226	3296	432	N. 79 9 W.	.16½	N. 0½ W.	.10	
	Aut.	2757	2139	1211	2376	3130	5068	3739	3221	360	S. 70 26 W.	.23	S. 81 W.	.05½	
	Win.	2429	1241	1749	3465	3741	3966	4106	2675	144	S. 44 26 W.	.23	S. 1½ E.	.09½	
	Year	11320	7712	6879	11639	12107	16441	15203	12599	1111	S. 67 27 W.	.17			
117. Kosmodemiansk.	Spr.	26	34	32	48	136	155	68	41	12	S. 30 11 W.	.42	S. 40 W.	.07	
	Sum.	21	93	37	55	45	125	104	40	32	S. 54 6 W.	.18	N. 5 E.	.20	
	Aut.	11	51	41	67	96	146	78	33	23	S. 24 27 W.	.35½	S. 48½ E.	.02	
	Win.	7	33	58	42	138	179	46	31	6	S. 19 2 W.	.47	S. 4½ E.	.12½	
	Year	65	211	168	212	415	605	296	145	73	S. 27 59 W.	.35			

118. Nijnii Novogorod.

Mr. Wesselowski gives the following as the computed results of observations made by A. S. Savelew, at the Gymnasium in this place, for twelve years, from 1837 to 1848 inclusive, viz.:—

Spring,	S. 29° W.	Winter,	S. 20° W.
Summer,	S. 62 W.	The year	S. 44 W.
Autumn,	S. 72 W.		

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
119. Ichak.	Spring	30	63	75	31	66	86	61	38	102	S. 9° 22′ W.	.09	N. 35½°E.	.09	184
	Summer	16	46	91	45	49	61	88	36	110	S. 1 26 W.	.09	N. 42½ E.	.13½	184
	Autumn	48	7	38	38	116	100	73	41	85	S. 37 32 W.	.31	S. 56½ W.	.14	182
	Winter	24	22	50	39	75	102	43	17	77	S. 15 27 W.	.23	S. 5 E.	.06	180
	The year	118	138	254	153	306	349	265	132	374	S. 22 26 W.	.17½	.....	...	730
120. Kazan.	The year	135	84	8	204	176	170	14	71	0	S. 10 18 E.	.22½	......	...	365
121. Viatka.	Spring	15	16	55	15	12	48	93	28	2	S. 81 29 W.	.25	S. 70 E.	.05	92
	Summer	23	15	72	30	16	19	49	30	7	N. 78 19 E.	.08	N. 85 E.	.38	92
	Autumn	25	6	7	2	7	43	100	34	1	N. 84 10 W.	.64	N. 76 W.	.35	75
	Winter	23	12	16	22	26	46	99	20	6	S. 74 25 W.	.41	S. 53½ W.	.13	90
	The year[2]	...	...	...	...	...	...	...	...	...	S. 86 50 W.	.30	......	...	349

[1] Last seven places combined.

[2] Computed from the resultants for the seasons.

(Nos. 91 to 126.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
122. Slobodsk.	Spring	61	74	15	77	81	210	28	282	0	N. 83° 32′ W.	.31	N. 15° W.	.25	
	Summer	39	111	40	160	100	207	34	116	0	S. 10 53 W.	.20	N. 86½ E.	.21	
	Autumn	24	54	10	70	156	376	39	90	0	S. 38 14 W.	.54	S. 22½ W.	.23	
	Winter	40	53	33	53	136	267	57	132	0	S. 50 22 W.	.39	S. 56 W.	.07	
	The year	164	292	98	360	473	1060	158	620	0	S. 49 40 W.	.32			
123. Glasof.	Spring	16	24	37	56	21	152	92	107	47	S. 71 52 W.	.34½	N. 85½ W.	.06	
	Summer	9	64	78	35	7	124	84	118	36	N. 80 20 W.	.19½	N. 27 E.	.16	
	Autumn	11	23	44	74	13	134	92	122	33	S. 73 49 W.	.31	N. 54 W.	.04	
	Winter	4	25	17	86	37	162	72	59	78	S. 41 43 W.	.37	S. 7 E.	.17	
	The year	40	136	176	251	78	572	340	406	194	S. 67 53 W.	.29			
124. N.E. Russia, Nos. 121, 122 & 123 combined.	Spring	92	114	107	148	114	410	213	417	49	S. 85 21 W.	.30½	N. 20 W.	.12½	
	Summer	71	190	190	225	123	350	167	264	43	S. 40 33 W.	.11	N. 72 E.	.19½	
	Autumn	60	83	61	146	176	553	231	246	34	S. 56 36 W.	.43	S. 46½ W.	.13	
	Winter	67	90	66	161	199	475	228	211	84	S. 51 51 W.	.38	S. 22 W.	.09½	
	The year	290	477	424	680	612	1788	839	1138	210	S. 60 58 W.	.29½			
124(*a*). Tschermoski. (See Addendum at the end of this Zone.)															
125. Zlatouste. December, 1849, to November, 1853.	January	261	212	815	2072	245	783	1452	4160	...	N. 66° 40′ W.	.27	....	...	124
	February	384	73	658	4223	366	219	804	3272	...	S. 41 58 E.	.10	....	...	113
	March	189	205	505	2689	158	347	2338	3570	...	N. 77 52 W.	.26	....	...	124
	April	367	334	618	2938	568	367	1436	3372	...	N. 86 2 W.	.11½	....	...	120
	May	485	382	705	1615	499	587	1483	4244	...	N. 58 39 W.	.32½	....	...	124
	June	394	486	455	2322	774	546	1578	3445	...	N. 79 26 W.	.20	....	...	120
	July	464	1123	1467	2171	269	269	1602	2635	...	N. 7 2 E.	.11	....	...	124
	August	643	225	1302	1318	64	338	1897	4212	...	N. 46 54 W.	.37	....	...	124
	September	596	111	402	2344	486	264	1886	3911	...	N. 67 45 W.	.29	....	...	120
	October	262	393	773	1337	341	996	2123	3775	...	N. 70 54 W.	.37	....	...	124
	November	235	549	1046	2026	144	1046	2000	2954	...	N. 78 54 W.	.21	....	...	120
	December	000	85	592	1878	372	1015	880	5178	...	N. 58 25 W.	.38	....	...	124
	Spring	347	307	609	2414	408	434	1752	3729	...	N. 70 18 W.	.23	....	...	368
	Summer	500	611	1075	1937	369	384	1692	3431	...	N. 50 13 W.	.21	....	...	368
	Autumn	364	351	740	1902	324	769	2003	3547	...	N. 71 38 W.	.28½	....	...	364
	Winter	215	123	688	2724	328	672	1045	4203	...	N. 73 9 W.	.18½	....	...	361
	The year	357	348	778	2244	357	565	1623	3727	...	N. 66 28 W.	.22	....	...	1461
1837, 50, 53 and 57.	Spring	55	39	125	685	87	114	378	1071	575	N. 72 1 W.	.19	....	...	368
	Summer	92	81	274	628	63	118	286	947	638	N. 52 23 W.	.11	....	...	368
	Autumn	40	36	137	438	36	56	287	1370	702	N. 50 22 W.	.35	....	...	364
	Winter	40	20	118	529	66	136	268	1139	903	N. 64 1 W.	.22	....	...	360
	The year	227	176	654	2280	252	424	1219	4527	2818	N. 59 12 W.	.22	....	...	1460
The above combined.[1]	Spring	...	...	...	...	...	...	...	...	...	N. 71 9 W.	.19	S. 27° W.	.03	552
	Summer	...	...	...	...	...	...	...	...	...	N. 51 3 W.	.14	N. ½ E.	.06	552
	Autumn	...	...	...	...	...	...	...	...	...	N. 54 1 W.	.24	N. 28 W.	.06	546
	Winter	...	...	...	...	...	...	...	...	...	N. 67 45 W.	.19	N. 28½ W.	.02	572
	The year	...	...	...	...	...	...	...	...	...	N. 62 28 W.	.20	....	...	2222
126. Nijnii Taguilsk. 1843 to 1851.	January	391	781	78	1555	795	2749	1257	2394	...	S. 69 12 W.	.33½			
	February	436	498	69	1761	850	3637	942	1807	...	S. 50 16 W.	.40½			
	March	318	939	126	1938	791	2596	991	2300	...	S. 58 48 W.	.26½			
	April	524	1294	265	1819	886	2262	838	2112	...	S. 60 11 W.	.17			
	May	794	1517	314	1550	608	1709	781	2727	...	N. 58 26 W.	.16½			
	June	483	1401	231	2156	687	2122	701	2218	...	S. 56 50 W.	.12			
	July	972	2513	208	2151	409	1387	355	2004	...	N. 30 48 E.	.14½			
	August	981	2084	81	1042	487	1461	798	3065	...	N. 35 53 W.	.29			
	September	681	919	38	1432	474	2098	858	3499	...	N. 75 0 W.	.32			
	October	314	688	53	1215	554	2657	1509	3010	...	S. 84 57 W.	.41			
	November	277	728	139	1401	693	3065	1123	2573	...	S. 70 18 W.	.36½			
	December	165	725	115	1739	797	2996	1243	2220	...	S. 58 19 W.	.36			
	Spring	545	1250	235	1769	762	2189	870	2380	...	S. 75 27 W.	.18	S. 84 E.	.05	
	Summer	812	1999	173	1783	528	1657	618	2429	...	N. 34 0 W.	.11½	N. 49½ E.	.21	
	Autumn	424	778	77	1349	574	2607	1163	3027	...	S. 85 52 W.	.35½	N. 83 W.	.13	
	Winter	331	668	87	1685	814	3127	1147	2140	...	S. 58 41 W.	.36	S. 29 W.	.17	
	The year	528	1174	143	1647	669	2395	950	2494	...	S. 79 52 W.	.23			
1848, 1849 and 1853.	Spring[2]	32	14	11	64	28	22	37	45	23	S. 28 34 W.	.06	S. 78½ E.	.11	92
	Summer[2]	17	93	6	46	16	18	24	34	22	N. 44 36 E.	.23	N. 57 E.	.35	92
	Autumn[2]	33	17	10	29	32	43	69	33	7	S. 79 43 W.	.30	S. 82½ W.	.17	91
	Winter[2]	17	10	3	20	48	45	69	31	27	S. 64 3 W.	.40	S. 58 W.	.27	90
	The year	189½	414½	52	479½	229½	651½	403½	553	326	S. 74 45 W.	.18	....	...	1096

[1] Assuming that the number of calms, not recorded in the first series, was the same relatively as in the second series.
[2] For 1853 only.

(Nos. 127 to 136.) **Siberia.**

Observed at the following places, viz.:—

Ajan, from September, 1847, to August, 1849, inclusive.

Bogoslowsk, during the years 1842 and 1857, and from December, 1849, to December, 1853, inclusive. The first series, except the last four columns, is transcribed from Wesselowski's work on the Climate of Russia, in which no account is taken of calms; and the second is inserted chiefly for the purpose of showing their relative proportion in the different seasons of the year. The third is a combination of the other two, due allowance being made for calms in the first.

Catharinenburg, during the years 1836, 1837, 1841 to 1850 inclusive, 1853 and 1857. The first series, except the last four columns, and the second entire are transcribed from the aforesaid work of Wesselowski, and the third and fourth correspond with the second and third in the previous number (Bogoslowsk).

Galanowsk, by Rev. Alexei Emeljanow, from September, 1857, to August, 1858, inclusive.

Ichim, from December, 1852, to November, 1853, inclusive, and 1857.

Jenisseisk, from May to December, 1871, inclusive, by Marx.

Kourgan, at the district school for ten years, 1842 to 1851 inclusive. The observations for the year 1853 are added to show the relative number of calms.

Krasnojarsk, during the month of May, 1868, and from June, 1870, to February, 1871, inclusive.

Nasimowo, by Middendorf, from June 14, 1843, to May 28, 1844, and from August 11 to September 29, 1844.

Tara, from 1832 to 1841 inclusive, 10 years.

Tobolsk, for a period of ten years, date not preserved; also from 1852 to 1861 inclusive; also (in the Addendum) from January, 1870, to May, 1872, by Slauty.

Tomsk, from December, 1852, to November, 1853, inclusive.

Werch Pelymsk, during the year 1871 (old style), by Djukow.

Place of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
127. Bogoslowsk.	Dec. 1849, to Nov. 1853.[1]	January	724	241	188	27	751	2493	2948	2627	...	N. 88° 0′ W.	.43			
		February	931	606	390	1312	1602	2727	1948	454	...	S. 41 5 W.	.20			
		March	989	565	919	760	989	3516	1643	618	...	S. 51 10 W.	.26			
		April	1256	1130	1036	675	958	1994	2166	785	...	S. 82 46 W.	.15			
		May	1632	1152	782	741	768	1989	1701	1235	...	N. 71 22 W.	.14½			
		June	1439	705	852	881	1160	1879	1762	1322	...	S. 83 27 W.	.15			
		July	2728	1514	1349	405	420	825	930	1829	...	N. 1 26 W.	.27½			
		August	1908	971	613	699	954	2010	1414	1431	...	N. 70 6 W.	.16			
		September	1148	314	464	205	915	2842	2650	1462	...	S. 82 16 W.	.34			
		October	1057	1111	325	434	799	2398	2507	1369	...	N. 89 50 W.	.26			
		November	801	434	301	367	885	3205	3439	568	...	S. 70 10 W.	.39			
		December	369	392	46	322	369	2949	5046	507	...	S. 76 30 W.	.38			
		Spring	1292	949	912	725	905	2500	1837	879	...	S. 74 25 W.	.16½	S. 65½° E.	.06	
		Summer	2025	1063	938	662	845	1571	1369	1527	...	N. 44 14 W.	.14½	N. 41 E.	.16	
		Autumn	1002	620	363	335	866	2815	2865	1133	...	S. 79 38 W.	.32½	S. 69 W.	.12	
		Winter	675	413	208	564	907	2723	3314	1196	...	S. 74 46 W.	.28½	S. 43 W.	.08	
		The year	1249	761	605	571	881	2402	2346	1184	...	S. 83 58 W.	.22½			
	1842, 50, 53 and 57.	Spring	225	223	177	172	291	560	344	344	792	S. 70 44 W.	.18	S. 28 E.	.07	368
		Summer	384	276	177	170	215	406	251	385	851	N. 54 16 W.	.13	N. 32 E.	.12	368
		Autumn	198	166	87	95	113	430	460	588	936	N. 74 48 W.	.31	N. 51 W.	.13	364
		Winter	93	112	9	198	154	379	545	154	1415	S. 67 58 W.	.24	S. 13 W.	.09	360
		The year	900	777	450	635	773	1775	1600	1471	3994	S. 87 57 W.	.20	......	...	1460
	2 preceding series combined.	Spring	...	...	...	...	...	...	...	...	...	S. 72 30 W.	.17	S. 49 E.	.06	
		Summer	...	...	...	...	...	...	...	...	...	N. 49 0 W.	.14	N. 47 E.	.14	
		Autumn	...	...	...	...	...	...	...	...	...	N. 87 53 W.	.31	N. 81 W.	.10	
		Winter	...	...	...	...	...	...	...	...	...	S. 71 40 W.	.26	S. 25½ W.	.08	
		The year	...	...	...	...	...	...	...	...	...	S. 86 00 W.	.21			

[1] Transcribed from Wesselowski, except the last four columns. His ratios of the resultants have been modified by making a due allowance for calms.

(Nos 127 to 136.) **Siberia.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
128. Galanowsk	Spring	15	0	0	1	36	12	1	9	18	S. 32° 26′ W.	.31	S. 4° W.	.14	92
	Summer	37	0	1	0	23	5	4	16	3	N. 39 20 W.	.32	N. 8 W.	.27	92
	Autumn	19	0	0	0	33	20	1	3	15	S. 33 34 W.	.34	S. 11 W.	.16	91
	Winter	4	3	1	1	25	4	1	8	40	S. 18 40 W.	.20	S. 53½ E.	.10	91
	The year	75	3	2	2	117	41	7	36	76	S. 51 16 W.	.20	......	...	366
128(*a*). Werch Pelymsk. (See Addendum at the end of this Zone.)															
129. Catharinenburg. 1841 to 1850.[1]	January	592	423	169	677	1235	1218	3655	2030	...	S. 87° 6′ W.	.36			
	February	329	433	191	1386	1716	1438	3276	1231	...	S. 59 8 W.	.33			
	March	472	630	567	1606	1543	1433	2346	1402	...	S. 51 4 W.	.22½			
	April	451	742	539	1033	1339	1077	3231	1587	...	S. 77 30 W.	.26½			
	May	1255	818	437	818	1030	1185	2102	2355	...	N. 70 48 W.	.28½			
	June	854	792	839	839	1118	1646	2282	1630	...	S. 83 14 W.	.20			
	July	931	1878	1204	1236	947	513	1397	1894	...	N. 12 10 E.	.11			
	August	1905	1111	905	587	508	762	1810	2412	...	N. 33 35 W.	.26			
	September	1025	863	306	450	863	1385	2967	2140	...	N. 76 54 W.	.34½			
	October	348	570	195	613	1182	1933	3393	1766	...	S. 78 49 W.	.40½			
	November	548	548	389	951	1052	1225	3328	1959	...	S. 86 13 W.	.33			
	December	592	288	80	416	1248	1360	4256	1760	...	S. 85 28 W.	.46			
	Spring	726	730	514	1152	1304	1232	2560	1781	...	S. 80 13 W.	.23			
	Summer	1230	1260	983	887	858	974	1830	1979	...	N. 46 33 W.	.14½			
	Autumn	640	660	297	671	1032	1514	3229	1955	...	S. 88 49 W.	.35½			
	Winter	504	381	147	826	1400	1339	3729	1674	...	S. 78 39 W.	.38			
	The year	775	758	485	884	1148	1265	2857	1847	...	S. 89 5 W.	.27			
Hours, 1841 to 1850.	Noon	656	589	343	675	868	1055	2261	1901	1652	N. 84 7 W.	.31			
	1 P. M.	647	592	368	642	946	1016	2375	1887	1527	N. 85 2 W.	.32			
	2 "	659	592	374	703	932	1052	2428	1862	1398	N. 86 7 W.	.32			
	3 "	675	603	357	709	809	1164	2322	1792	1569	N. 85 45 W.	.31			
	4 "	670	625	323	709	890	1113	2361	1725	1585	N. 87 14 W.	.31			
	5 "	650	647	326	709	876	1116	2347	1661	1663	N. 87 52 W.	.30			
	6 "	642	625	340	731	874	1055	2261	1538	1934	N. 89 21 W.	.28			
	7 "	631	620	338	748	890	954	2202	1404	2213	S. 89 15 W.	.25½			
	8 "	561	578	366	728	860	924	2065	1267	2651	S. 85 57 W.	.23			
	9 "	500	525	377	717	865	887	1937	1203	2989	S. 82 38 W.	.21½			
	10 "	449	525	354	703	854	851	1859	1075	3330	S. 79 25 W.	.20½			
	11 "	441	510	380	710	837	861	1784	1094	3383	S. 79 0 W.	.19½			
	Midnight	465	510	384	661	820	841	1747	1020	3551	S. 79 42 W.	.19			
	1 A. M.	441	514	367	620	788	882	1722	1016	3650	S. 80 10 W.	.19			
	2 "	437	506	343	641	726	845	1739	1024	3739	S. 82 16 W.	.19			
	3 "	424	543	294	580	706	857	1674	1020	3902	S. 84 12 W.	.19			
	4 "	437	543	306	543	731	837	1673	1000	3930	S. 84 34 W.	.19			
	5 "	473	506	359	535	690	845	1686	1049	3857	S. 87 11 W.	.19½			
	6 "	547	508	315	491	675	820	1795	1035	3813	N. 89 3 W.	.21			
	7 "	581	541	301	511	687	876	1870	1105	3528	N. 88 3 W.	.22			
	8 "	606	586	310	552	712	927	2046	1234	3027	N. 86 54 W.	.24½			
	9 "	656	628	310	578	739	1013	2113	1423	2540	N. 84 53 W.	.27			
	10 "	617	642	312	603	809	1010	2180	1608	2219	N. 84 52 W.	.28½			
	11 "	617	617	315	642	857	1002	2241	1825	1884	N. 83 59 W.	.30½			
1836, 37, 50, 53 & 57.	Spring	569	441	418	1172	686	1031	1950	625	1632	S. 59 29 W.	.21	......	...	460
	Summer	808	638	418	810	363	672	1365	887	2122	N. 65 36 W.	.14	......	...	460
	Autumn	415	305	312	611	356	1359	2442	652	1567	S. 77 15 W.	.37	......	...	455
	Winter	337	163	114	828	501	1206	2719	277	1783	S. 66 24 W.	.41	......	...	451
	The year	2129	1547	1262	3421	1906	4268	8476	2441	7104	S. 74 11 W.	.27	......	...	1826
1st and 3d series combined.	Spring	...	...	...	...	..	...	...	...	...	S. 73 45 W.	.27	S. 27° E.	.05	
	Summer	...	...	...	...	...	...	...	...	...	N. 52 43 W.	.14	N. 54½ E.	.20½	
	Autumn	...	...	...	...	...	...	...	...	...	S. 84 51 W.	.36	N. 1½ W.	.08	
	Winter	...	...	...	...	...	...	...	...	...	S. 74 22 W.	.39	S. 53 W.	.12½	
	The year	...	...	...	...	...	...	...	...	...	S. 84 44 W.	.27			

[1] Transcribed from Wesselowski, except the last four columns. His ratios of the resultants have been modified by making an allowance for calms.

(Nos. 127 to 136.) **Siberia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
130. Kourgan. 1842 to 1851.[1]	January	1416	746	759	785	2304	1300	1776	914	...	S. 51° 35′ W.	.16			
	February	941	802	1010	1051	2088	1535	1397	1176	...	S. 32 7 W.	.13½			
	March	1373	1012	1109	831	1554	1349	1807	964	...	S. 72 30 W.	.08			
	April	1391	832	1313	1066	1600	1106	1600	1092	...	S. 52 25 W.	.05			
	May	1863	850	887	887	1438	1463	1475	1137	...	N. 81 50 W.	.10			
	June	1383	1145	936	1285	1508	768	1648	1327	...	N. 70 35 W.	.04½			
	July	1460	1043	1460	1095	991	1265	1369	1317	...	N. 25 6 W.	.04			
	August	2272	1162	1306	770	1227	718	1292	1253	...	N. 0 27 W.	.12			
	September	1936	923	1000	858	1385	1052	1397	1448	...	N. 45 51 W.	.11			
	October	1843	678	939	1189	1201	1082	1807	1261	...	N. 71 10 W.	.11½			
	November	1270	940	1085	1243	1415	1177	1667	1203	...	S. 64 48 W.	.06½			
	December	1393	801	912	1233	1628	1800	1492	740	...	S. 36 8 W.	.15			
	Spring	1542	898	1103	928	1531	1306	1627	1064	...	S. 78 46 W.	.07	S. 42° W.	.01	
	Summer	1705	1117	1234	1050	1242	917	1436	1299	...	N. 16 54 W.	.06½	N. 32 E.	.09	
	Autumn	1683	847	1008	1097	1334	1104	1624	1304	...	N. 71 32 W.	.08½	N. 26 W.	.04	
	Winter	1250	783	894	1023	2007	1545	1555	943	...	S. 40 13 W.	.15	S. 17 W.	.11	
	The year	1545	911	1060	1025	1528	1218	1561	1152	...	S. 82 17 W.	.06½			
Dec. 1852 to Nov. 1853.	Spring	38	19	35	73	35	1	7	5	63	S. 70 4 E.	.34			
	Summer	35	21	41	48	37	11	12	12	59	S. 71 44 E.	.23			
	Autumn	70	15	4	38	44	14	25	25	38	N. 32 28 W.	.07½			
	Winter	17	5	11	116	33	6	13	25	44	S. 37 11 E.	.37			
	The year	160	60	91	275	149	32	57	67	204	S. 59 56 E.	.26			
131. Tobolsk.[2] 20 years.	January	1	1	1	11	5	3	3	4	2					
	February	1	1	2	10	5	2	2	3	2					
	March	1	1	1	8	6	4	2	4	4					
	April	1	1	2	7	7	5	2	4	1					
	May	3	2	3	4	3	3	4	7	2					
	June	4	2	3	4	2	5	3	6	1					
	July	4	3	2	5	4	3	2	6	2					
	August	4	2	1	4	4	4	4	6	2					
	September	1	2	1	4	4	6	5	5	2					
	October	2	0	2	4	5	7	5	4	2					
	November	1	1	1	5	5	7	5	3	2					
	December	1	1	1	8	7	4	3	3	3					
	Spring	5	4	6	19	16	12	8	15	7	S. 13 55 W.	.22	S. 70½ E.	.03½	
	Summer	12	7	6	13	10	12	9	18	5	N. 78 46 W.	.11	N. 5 W.	.23	
	Autumn	4	3	4	13	14	20	15	12	6	S. 44 28 W.	.35	S. 72 W.	.16½	
	Winter	3	3	4	29	17	9	8	10	7	S. 9 19 E.	.35½	S. 44 E.	.20	
	The year	24	17	20	74	57	53	40	55	25	S. 24 1 W.	.21	......	...	
131(*a*). Tobolsk, 1870–72. See Addendum at the end of this Zone.															
132. Ichim.	Spring	57	27	16	16	40	152	41	66	47	S. 76° 23′ W.	.33	N. 62° W.	.09	
	Summer	70	100	39	50	61	83	16	56	77	N. 50 37 W.	.07	N. 47½ E.	.25	
	Autumn	56	58	20	33	74	104	88	72	41	S. 79 51 W.	.24	N. 1 E.	.07	
	Winter	35	13	15	25	95	248	27	35	46	S. 40 13 W.	.53	S. 19 W.	.30	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 63 19 W.	.27			
133. Tara.[4]	January	1532	1516	2422	1334	626	791	577	1202	...	N. 60 44 E.	.28	N. 74 E.	.13½	310
	February	1307	1688	2432	1198	562	1034	744	1034	...	N. 64 18 E.	.25	N. 84½ E.	.11	283
	March	942	1830	2681	1034	743	942	978	851	..	N. 74 14 E.	.25½	S. 78 E.	.13½	310
	April	1531	1333	2162	1802	360	1207	991	612	...	N. 78 29 E.	.21½	S. 59¾ E.	.11	300
	May	1232	1026	2346	1085	997	997	1158	1158	...	N. 75 10 E.	.12	S. 1½ E.	.06½	310
	June	730	730	1139	1477	1085	1192	1459	2188	...	S. 81 0 W.	.11½	S. 63 W.	.25½	300
	July	597	988	1893	1111	1152	1029	1852	1378	...	S. 23 45 W.	.04½	S. 43½ W.	.19	310
	August	1323	781	2234	933	564	2147	1085	933	...	S. 44 21 E.	.03	S. 38½ W.	.15¼	310
	September	2838	1336	1636	601	451	1085	768	1284	...	N. 10 32 E.	.31	N. 15½ W.	.21½	300
	October	2530	1220	1551	1144	497	407	979	1672	...	N. 14 33 E.	.31	N. 10 W.	.21	310
	November	2448	1008	2048	944	880	848	336	1488	...	N. 35 0 E.	.25	N. 16½ E.	.11	300
	December	1774	1130	1868	1742	832	863	628	1162	...	N. 68 29 E.	.20	S. 72 E.	.07½	310
	Spring	1235	1396	2396	1307	700	1049	1042	874	...	N. 75 58 E.	.19½	S. 56¼ E.	.09	920
	Summer	883	833	1755	1174	934	1456	1465	1500	...	S. 55 20 W.	.04½	S. 50½ W.	.19½	920
	Autumn	2605	1188	1745	896	609	780	694	1481	...	N. 18 45 E.	.28½	N. 7½ W.	.17½	910
	Winter	1538	1445	2241	1425	673	896	650	1133	...	N. 64 23 E.	.24	N. 86½ E.	.10	903
	The year	1565	1215	2035	1200	729	1045	963	1247	...	N. 49 32 E.	.15	......	...	3653

[1] Transcribed from Wesselowski, except the last four columns. His ratios of the resultants have been modified by allowing the same proportion for calms as was observed in the corresponding months and seasons of the year 1853.

[2] Prof. Kaemtz gives the resultant direction of the wind at Tobolsk for ten years in the earlier half of this century (exact date not stated) S. 67° W.

[3] Computed from the resultants for the seasons. [4] Transcribed from Wesselowski, except the last 4 columns.

(Nos. 127 to 136.) **Siberia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
134. Tomsk.	Spring	21	18	3	32	24	57	3	22	4	S. 28° 33′ W.	.23	N. 23¼° E.	.07½	92
	Summer	20	42	5	35	9	77	12	55	21	N. 89 22 W.	.16	N. 4½ W.	.27½	92
	Autumn	22	25	4	45	40	88	3	42	4	S. 32 34 W.	.28	N. 15 W.	.03½	91
	Winter	1	2	1	42	52	67	1	11	3	S. 11 23 W.	.70	S. ¼ E.	.41½	90
	The year	64	87	13	154	125	289	19	130	32	S. 27 12 W.	.30½	......	...	365
135. Nasimowo.	Spring	5	0	0	0	18	14	5	13	22	S. 60 21 W.	.36	N. 73½ W.	.14	
	Summer	1	2	0	3	15	25	3	10	36	S. 43 44 W.	.37	S. 57 W.	.09	
	Autumn	13	0	0	2	20	16	1	7	38	S. 47 1 W.	.22	N. 14½ E.	.07	
	Winter	6	0	1	7	22	4	1	1	42	S. 3 30 E.	.27½	S. 74 E.	.20	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 39 25 W.	.28			
135(*a*). Jenisseisk. See Addendum at the end of this Zone.															
135(*b*). Krasnojarsk.	May	6	7	5	7	12	24	24	9	6	S. 62° 52′ W.	.36½	S. 51½° E.	.07	
	Summer	43	51	8	19	14	62	24	72	6	N. 46 13 W.	.28½	N. 38½ E.	.36½	
	Autumn	32	30	8	9	11	129	57	25	0	S. 73 52 W.	.45	S. 88½ W.	.05	
	Winter	13	17	6	5	8	197	43	8	2	S. 54 10 W.	.68	S. 32½ W.	.32½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 71 52 W.	.40			
136. Ajan.	January	3	3	1	3	5	8	1	1	6	......	...	......	...	62
	February	3	5	2	1	2	3	2	1	9	......	...	......	...	57
	March	2	11	1	1	3	3	0	1	9	......	...	......	...	62
	April	2	9	1	1	5	4	0	1	7	......	...	......	...	60
	May	3	10	1	0	3	5	1	0	8	......	...	......	...	62
	June	2	10	1	0	2	8	2	0	5	......	...	......	...	60
	July	1	10	3	0	1	7	1	1	7	......	...	......	...	62
	August	2	8	2	0	2	8	1	0	8	......	...	......	...	62
	September	0	13	2	0	2	5	1	0	7	......	...	......	...	60
	October	3	6	1	1	2	5	1	2	10	......	...	......	...	62
	November	3	6	1	2	3	4	3	2	6	......	...	......	...	60
	December	2	8	1	2	3	8	1	2	4	......	...	......	...	62
	Spring	7	30	3	2	11	12	1	2	24	N. 59 21 E.	.19	N. 59 E.	.11	184
	Summer	5	28	6	0	5	23	4	1	20	N. 48 44 E.	.07	N. 75 W.	.02	184
	Autumn	6	25	4	3	7	14	5	4	23	N. 39 1 E.	.11	N. 1½ W.	.04½	182
	Winter	8	16	4	6	10	19	4	4	19	S. 7 18 W.	.06	S. 37½ W.	.13	181
	The year	26	99	17	11	33	68	14	11	86	N. 59 6 E.	.08	......	...	731

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 7.

Observations at Sandwick Manse, Orkney Islands, from 1863 to 1868, 6 years, with a self-registering anemometer. Calculated in the Weather Reports of the London Meteorological Office, year 1871, Part I.

	Between N. & N.E.	Between N.E. & E.	Between E. & S.E.	Between S.E. & S.	Between S. & S.W.	Between S.W. & W.	Between W. & N.W.	Between N.W. & N.	Mean direction.	Ratio of resultant.	Total number of miles.
34(*a*). Sandwich Manse, number of hours.											
January	425	237	434	959	645	903	330	353			
February	246	197	428	671	452	1072	498	301			
March	450	305	692	718	420	754	416	471			
April	370	266	766	710	530	782	347	399			
May	377	465	987	564	295	652	440	359			
June	141	179	850	376	404	1168	607	257			
July	374	286	477	437	349	936	782	733			
August	354	218	734	581	448	974	587	394			
September	264	236	438	851	548	1031	584	210			
October	258	259	688	712	456	868	466	448			
November	315	155	417	702	369	914	700	638			
December	137	140	440	924	617	899	684	382			
The year	3711	2943	7351	8205	5533	10953	6441	4945	S. 14 W.	20	
Number of miles.											
January	5227.5	2884	7638.4	17166.1	10384.5	24561.6	7755	7907.2	S. 52° W.	.38	83424.3
February	2952	2206.4	6462.8	5502.2	7596.4	27764.8	13157.2	7163.8	S. 69 W.	.48	72805.6
March	6026	3477	13632.4	12493.2	5628	14099.8	8902.4	11401.9	S. 32 W.	.14	75640.7
April	3885	3777.2	14094.4	10792	7314	14072	6315.4	5304.2	S. 11 W.	.24	65534.2
May	4410.9	6231	14902.4	7896	3215.5	9584.4	5544	4927	S. 45 E.	.21	56711.2
June	1057.5	1897.4	13380	4812.3	4605.6	22903.2	7708.9	2852.7	S. 44 W.	.29	59218.1
July	4151.4	2717	6448.7	5244	2961.2	14133.6	9227.6	8402.8	N. 77 W.	.25	53386.3
August	3379.2	1809.4	10569.6	7088.2	4231.2	12467.2	7396.2	4649.2	S. 42 W.	.21	51688.2
September	2402.4	2528.8	6000.6	11063	5425.2	14330.9	8655.2	3751	S. 46 W.	.35	54157.5
October	1856.6	1937.5	11764.8	11036	4139.6	13540.8	9366.6	3180.8	S. 40 W.	.21	56822.8
November	3622.5	1984	7506	12776.4	3985.2	19651	14560	10144.2	S. 78 W.	.32	72225.2
December	1671.4	1316	7656	15615.6	10008.2	21468.1	17305.2	8174.8	S. 63 W.	.45	82215.3
The year	40640.4	32765.7	120056.1	121484.7	69494.6	208577.4	115893.7	77889.6	S. 53 W.	.27	783829.4
Mean velocity, miles per hour.											
January	12.3	12.0	17.6	17.9	16.1	27.2	23.5	22.4			
February	12.0	11.2	15.1	18.2	15.7	25.9	26.4	23.8			
March	13.1	11.4	19.7	17.4	13.4	18.7	21.2	18.9			
April	15.0	14.2	18.4	15.2	13.8	18.0	18.2	15.8			
May	11.7	13.4	15.2	14.0	10.9	14.7	12.6	13.0			
June	7.5	10.6	14.8	12.8	11.4	14.9	12.7	11.1			
July	11.1	9.5	13.1	12.0	8.3	15.1	11.8	11.6			
August	9.8	8.3	14.4	12.2	9.4	12.3	12.6	11.8			
September	9.1	10.8	13.7	13.0	9.9	13.9	14.8	13.1			
October	7.2	7.5	17.1	15.5	9.1	15.6	20.1	17.1			
November	11.5	12.8	18.0	18.2	10.8	21.5	20.8	15.2			
December	12.2	9.4	17.4	16.9	14.6	23.9	25.3	21.4			
The year	10.9	11.1	16.3	14.9	12.6	18.3	18.0	15.7			

Addendum to Zone No. 7.—*Continued.*

103(*a*). Observations at the Central Physical Observatory of St. Petersburg, Russia, with a self-registering anemometer of Adie. Year 1871. Published in the "Annalen des Physikalischen Observatoriums," 1871.

	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Total number of kilometers.	Mean direction.	Ratio of resultant.
Number of kilometers.											
January	332.4	843.2	452.2	3952.5	1449.5	847.2	2377.3	702.4	10955	S. 6° 14′ E.	.31
February	182.8	887.3	311.4	1021.4	959.4	218.0	2866.6	776.9	7214	S. 76 17 W.	.28
March	160.5	701.1	110.3	3058.2	1891.5	4272.1	3735.3	1672.6	15601	S. 44 39 W.	.47
April	315.3	1133.8	763.9	2171.0	2143.5	2104.0	3465.5	805.5	12902	S. 34 49 W.	.25
May	772.0	2527.0	843.4	433.6	606.2	303.4	2299.2	1830.1	9614	N. 17 43 W.	.30
June	175.2	3696.1	1034.6	1584.6	1019.7	373.4	1389.7	1118.2	10392	N. 63 13 E.	.25
July	139.0	391.7	605.2	2094.1	1200.0	1190.7	4487.8	2029.7	12139	S. 69 13 W.	.39
August	542.4	75.0	63.9	1324.0	1098.4	2799.3	3847.2	3761.4	13510	S. 84 10 W.	.55
September	1353.8	1500.7	267.6	3284.6	664.6	1336.8	1168.7	2856.5	12436	N. 43 50 W.	.06
October	239.9	93.5	407.6	1338.3	767.2	4470.0	1809.4	2838.6	11965	S. 65 16 W.	.51
November	620.9	179.4	98.2	1940.2	2611.8	2580.8	332.1	3154.5	11518	S. 44 37 W.	.34
December	430.2	833.7	75.7	815.0	2316.2	3806.2	3966.8	3439.6	15684	S. 74 56 W.	.52
The year	5264	12863	5034	23018	16718	24301	31745	24987	143930	S. 63 22 W.	.28
Mean velocity, kilometers per hour.											
January	6.0	7.8	13.7	22.8	16.9	14.4	19.8	6.4			
February	5.4	6.2	7.6	11.7	16.1	9.1	14.7	8.7			
March	10.7	12.1	13.8	26.8	19.2	23.7	17.7	27.9			
April	14.3	14.0	13.4	24.4	19.5	17.0	19.1	14.4			
May	14.3	11.0	14.5	11.4	12.9	11.7	16.8	11.8			
June	10.3	12.9	12.5	18.2	21.7	14.9	13.9	14.9			
July	12.6	11.2	14.1	15.2	15.2	13.2	19.1	18.1			
August	14.3	10.7	10.6	14.5	16.2	20.4	19.4	19.0			
September	16.3	12.4	13.4	24.2	16.6	16.5	16.7	16.8			
October	11.4	8.5	22.6	20.9	10.5	16.4	14.9	17.4			
November	12.9	6.9	5.8	16.3	13.4	17.6	18.4	21.0			
December	13.9	16.7	12.6	20.9	19.3	23.1	26.1	19.0			
The year	12.3	11.2	12.9	19.6	16.3	18.3	17.7	15.8			

Number of kilometers in the different hours of the day. Summer.

Morning hours.

	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12
Aggregate	1403	1384	1331	1338	1340	1341	1362	1426	1470	1550	1567	1568
W.	289	268	200	225	190	201	255	272	339	479	568	501

Evening hours.

	12–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12
Aggregate	1771	1703	1762	1810	1776	1644	1526	1438	1380	1366	1374	1395
W.	594	606	679	661	656	536	464	409	412	302	294	323

Addendum to Zone No. 7.—*Continued.*

(Nos. 124(a) to 135(a).)

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.								
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.
124(a). Tscher-moski, 1865–1867.	January	5	5	9	27	40	7	12	15	
	February	8	10	9	19	29	11	8	13	
	March	13	3	3	16	39	22	13	6	
	April	12	0	4	15	36	20	14	14	
	May	18	6	5	6	25	17	24	16	
	June	5	13	8	7	21	11	22	18	
	July	14	6	10	14	14	9	18	14	
	August	14	6	5	10	21	18	14	19	
	September	8	4	4	6	32	18	17	17	
	October	12	5	6	10	38	20	17	19	
	November	3	2	7	21	57	18	9	8	
	December	5	3	3	15	49	24	10	10	
	Spring	43	9	12	37	100	59	51	36	
	Summer	33	25	23	31	56	38	54	51	
	Autumn	23	11	17	37	127	56	43	44	
	Winter	18	18	21	61	118	42	30	38	
	The year	117	63	73	166	401	195	178	169	
131(a). Tobolsk, 1870–72.	January	13	0	15	10	13	0	7	7	16
	February	9	1	12	19	8	10	11	4	11
	March	9	5	6	13	23	5	19	3	10
	April	13	6	13	9	9	12	7	6	15
	May	9	6	6	16	12	8	14	13	5
	June	8	4	6	12	7	4	5	7	7
	July	14	6	14	2	6	2	2	0	9
	August	13	1	6	5	10	7	9	5	6
	September	9	4	2	3	9	4	3	9	7
	October	5	1	1	5	5	7	14	8	16
	November	12	1	2	4	13	7	8	1	12
	December	4	4	4	19	6	5	6	3	10
	Spring	21	17	25	28	44	25	40	22	30
	Summer	35	11	26	19	23	13	16	12	22
	Autumn	26	6	5	17	27	18	30	18	35
	Winter	26	5	31	48	27	15	24	14	37
	The year	108	39	87	112	121	71	110	66	124

	1871.	Relative Prevalence and force of Winds from the Different Points of the Compass.																
		North.		N. E.		East.		S. E.		South.		S. W.		West.		N. W.		Calm or variable.
		No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	
135(a). Jenisseisk.	May	12	2.7	5	2.0	17	3.0	6	2.4	5	3.6	9	2.9	14	3.1	25	3.1	0
	June	9	3.4	4	3.3	6	5.3	4	3.3	10	3.4	15	4.1	9	3.5	25	4.0	8
	July	3	3.3	3	2.7	17	3.3	14	2.9	10	2.8	10	2.8	5	3.2	20	3.4	10
	August	6	2 7	2	3.0	12	3.5	2	3.0	2	3.0	9	2.4	28	3.1	18	2.6	14
	September	3	2.7	6	3.3	12	3.2	3	2.7	6	4.3	8	3.5	20	4.1	21	2.7	11
	October	0	0	1	4.0	12	2.2	9	2.9	22	3.9	3	2.7	27	3.5	4	2.0	15
	November	3	2.0	0	0	6	3.3	14	3.1	9	4.2	12	3.8	27	3.0	4	2.0	15
	December	9	2.0	1	2.0	5	3.2	12	3.0	7	2.3	10	2.2	23	2.7	7	2.3	19

ZONE No. 8.

LATITUDE 50° TO 55° NORTH.

The data for the study of the winds of this zone consist of observations made at 218 different places on land, for an aggregate period of not less than 1174 years, probably over 1200 years, and for nearly 30 years at sea, viz., 9327 days on the Pacific Ocean, and 1533 on the Atlantic. The places on land are distributed as follows:—

Where observed.	No. of stations.	Aggregate length of time.
Aleutian Islands,	1	14 years.
America,	6	$10\frac{1}{4}$ years.
British Isles,	108	$345\frac{1}{4}$ years.
Continental Europe,	94	Not less than 753 years, and probably over 800.
Siberia,	9	Over 52 years.

(No. 1.) **Aleutian Islands.**

Computed from observations made at Iluluk, from the year 1825 to 1834 inclusive (old style), except the months of May, June, July, August and September, 1827, the last half of 1829, and 160 observations in the first half; and published in the Report of the United States Coast Survey for 1867.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
2. Iluluk.	January	120	22	52	74	88	29	49	60	138					
	February	58	20	81	66	74	45	48	62	148					
	March	81	16	48	83	84	66	83	98	81					
	April	53	32	63	81	81	87	79	67	90					
	May	40	42	78	76	68	63	87	81	113					
	June	34	38	56	84	89	77	41	47	130					
	July	21	23	17	72	94	130	73	22	141					
	August	37	16	15	74	76	85	101	54	176					
	Sept'mber	67	19	25	58	55	82	114	63	149					
	October	52	13	29	54	55	94	92	107	156					
	November	68	18	37	57	57	69	122	73	133					
	December	139	20	47	39	50	52	55	114	134					
	Spring	174	90	189	240	233	216	249	246	284	S. 46° 50′ W.	.11	S. $76\frac{1}{2}$° E.	.03	
	Summer	92	77	88	230	259	292	215	123	447	S. 27 15 W.	$.24\frac{1}{2}$	S. $0\frac{1}{2}$ W.	.15	
	Autumn	187	50	91	169	167	245	328	243	438	S. 81 17 W.	$.22\frac{1}{2}$	N. $73\frac{1}{2}$ W.	.12	
	Winter	317	62	180	179	212	126	152	236	420	N. 29 55 W.	.06	N. 33 E.	$.14\frac{1}{2}$	
	The year	770	279	548	818	871	879	944	848	1589	S. 59 5 W.	.13			

Alaska.

Unalaska. Observed by C. P. Fish, six times a day, from June 1 to August 3, 1872, and contained in the Annual Report of the Chief Signal Officer U. S. A. for 1873.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
1(*a*) Unalaska	Summer	19	77	17	42	44	46	87	38	14	S. 82° 34′ W.	12	64

(Nos. 3 to 12.) **Pacific Ocean,** East of longitude 180° W.

Computed from observations, for an aggregate period of over 25 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
3. Longitude 160° to 165° W.																				
Spring	20	60	11	45	11	33	21	70	17	98	46	39	33	101	2	85	21	S. 83° 37′ W.	.17	244
Summer	15	35	12	113	47	106	46	96	39	121	71	160	50	94	17	47	40	S. 16 51 W.	.22	370
4. Longitude 155° to 165° W.																				
Winter	0	7	1	1	0	1	0	4	0	1	3	20	6	22	14	10	0	N. 69 27 W.	.64	30
5. Longitude 155° to 160° W.																				
Spring	30	89	63	146	48	118	44	230	38	271	45	227	61	147	40	92	73	S. 25 59 W.	.15	587
Summer	40	200	44	140	111	248	93	232	57	309	200	401	146	338	97	170	90	S. 54 39 W.	.21	972
6. Longitude 150° to 155° W.																				
Spring	28	37	54	108	86	125	99	283	135	304	142	277	89	90	37	57	44	S. 12 10 W.	.38	665
Summer	124	260	54	181	148	329	131	395	142	561	262	777	432	743	202	327	97	S. 70 44 W.	.31	1722
Autumn	0	1	0	7	3	11	5	16	16	20	24	61	34	63	23	12	2	S. 77 14 W.	.57	98
7. Longitude 145° to 150° W.																				
Spring	23	74	14	73	34	94	56	109	59	177	85	133	65	129	50	87	54	S. 42 15 W.	.17	439
Summer	87	331	100	248	117	358	175	374	136	411	249	641	275	898	191	329	156	S. 80 1 W.	.23	1692
Autumn	0	8	0	5	5	2	1	15	0	55	8	96	36	133	16	19	0	S. 85 54 W.	.69	133
8. Longitude 140° to 145° W.																				
Spring	4	24	6	15	12	24	13	71	32	54	44	80	22	77	13	20	19	S. 45 45 W.	.36	177
Summer	38	144	43	101	33	117	69	257	92	275	123	306	188	354	80	266	99	S. 70 10 W.	.28	848
Autumn	0	3	3	0	4	21	10	0	8	26	16	35	25	77	18	16	5	S. 83 53 W.	.35	89
9. Longitude 135° to 140° W.																				
Summer	69	140	14	43	27	92	32	164	38	150	69	250	170	462	254	329	76	N. 69 18 W.	.43	793
10. Longitude 130° to 140° W.																				
Winter	6	1	0	0	0	7	6	9	2	17	18	18	8	27	8	16	9	S. 77 18 W.	.44	51
11. Longitude 125° to 140° W.																				
Spring	4	5	0	18	1	14	1	30	5	29	5	9	0	20	11	19	1	S. 29 9 W.	.14	57
12. Longitude 125° to 135° W.																				
Summer	69	19	7	9	5	9	20	50	11	36	46	83	22	125	118	222	25	N. 54 24 W.	.51	292

(No. 13.) **Alaska.**

Observed at Fort Tongass, for an aggregate period of 21 months, in the years 1867, 1868 and 1869, by the Post Surgeon.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
13. Fort Tongass.	January	13	29	7	26	12	3	0	3	0					
	February	19	14	14	23	11	0	0	2	1					
	March	16	18	18	20	19	0	0	1	1					
	April	16	4	10	34	22	3	1	0	0					
	May	30	16	19	36	36	8	18	21	2					
	June	13	20	2	32	67	12	5	8	6					
	July	10	0	2	54	75	14	5	16	5					
	August	7	3	7	45	92	14	4	10	5					
	September	23	7	20	24	72	8	4	18	4					
	October	29	23	15	55	36	12	0	7	9					
	November	26	33	34	37	28	6	3	4	9					
	December	41	20	25	36	30	6	1	17	9					
	Spring	62	38	47	90	77	11	19	22	3	S. 65° 12′ E.	.28½	N. 11½° E.	.08	
	Summer	30	23	11	131	234	40	14	34	16	S. 10 40 E.	.54½	S. 23½ W.	.36	
	Autumn	78	63	69	116	136	26	7	29	22	S. 58 1 E.	.32	N. 52½ E.	.04	
	Winter	73	63	46	85	53	9	1	22	10	N. 83 54 E.	.35½	N. 25½ E.	.25½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 51 26 E.	.31½			

[1] Computed from the resultants for the seasons.

(Nos. 14 to 16.) **Hudson's Bay Territory.**

Observed at the following places, viz.:—

Fort a la Corne, by Lawrence Clark, Jr., during the months of November and December, 1864.

Red River Settlement, by Donald Gunn, for an aggregate period of over five years, in the years 1844, and 1855 to 1861 inclusive.

Moose Factory, by J. Mackenzie, for an aggregate period of over 17 months, in the years 1861 and 1862.

Place and kind of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S.& W.	West.	N. W. or between N.& W.	Calm or variable.		
14. Fort a la Corne.[1]	November	27	26	13	0	3	0	13	8	6	N. 14° 50′ E.	.54
	December	7	5	17	4	_0	3	18	8	24	N. 62 47 W.	.03
15. Red River Settlement. Surface wind in 1855, '56, & '57.[2] No. of observations.	Spring	72	14	4	16	101	25	18	20	...	S. 35 57 W.	.153
	Summer	108	24	17	7	115	54	61	30	...	S. 81 39 W.	.192
	Autumn	106	6	15	17	155	58	60	47	...	S. 57 55 W.	.260
	Winter	84	9	5	1	118	45	41	28	...	S. 63 23 W.	.260
	The year[3]	...	..	...	...	...	...	...	...	...	S. 68 31 W.	.278
No. of miles.	Spring	383	38	8	64	566	156	64	161	...	S. 50 30 W.	.21
	Summer	582	161	40	18	597	252	337	190	...	N. 85 0 W.	.21
	Autumn	715	14	34	91	971	263	214	347	...	S. 64 57 W.	.22
	Winter	379	28	10	2	460	96	94	94	...	S. 72 0 W.	.17
	The year[3]	..	...	...	...	...	...	...	...	...	S. 70 5 W.	.20
Mean velocity.	Spring	5.32	2.71	2.00	4.00	5.60	6 24	3.56	8.05			
	Summer	5.39	6.71	2.35	2.57	5.19	4.67	5.52	6.33			
	Autumn	6.75	2.33	2.27	5.35	6.26	4.53	3 57	7.38			
	Winter	4.51	3.11	2.00	2.00	3.90	2.13	2.29	3.36			

[1] Surface winds and motion of clouds combined.

[2] From this table we obtain the following summary of results :—

	Spring	Sum'r.	Aut.	Winter	Year.
Average velocity of all winds in miles per hour	5.33	5.23	5.71	3.51	4.94
Velocity in mean direction on the supposition that the winds, from every point of the compass, move with the foregoing average velocity . .	.81	1.00	1.48	.90	1.37
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.13	1.12	1.27	.60	.99
Excess of the latter over the former	+.32	+.12	—.21	—.30	—.38

[3] Computed from the resultants for the seasons.

(Nos. 14 to 16.) **Hudson's Bay Territory.**—*Continued.*

Place of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
16. Red River Settlement, Aggregate for entire period.	Surface winds.	Spring	389	77	51	64	365	66	84	106	176	N. 41° 47′ W.	.06	N. 58° E.	.10
		Summer	318	69	76	65	413	127	197	194	215	S. 79 58 W.	.15	S. $47\frac{1}{2}$ W.	$.02\frac{1}{2}$
		Autumn	362	35	36	83	393	113	146	178	48	S. 85 20 W.	.17	S. 83 W.	.04
		Winter	314	35	50	18	388	123	103	136	142	S. 75 7 W.	.16	S. 40 W.	.04
		The year[1]	...	...	...	...	...	...	...	...	...	S. 85 58 W.	.13		
	Motion of clouds.	Spring	89	51	21	79	85	66	30	89	...	N. 89 1 W.	.05	S. 77 E.	.07
		Summer	126	69	34	40	122	49	146	97	...	N. 67 4 W.	.22	N. 51 W.	.11
		Autumn	101	55	27	57	154	43	65	61	...	S. 37 48 W.	$.09\frac{1}{2}$	S. $35\frac{1}{2}$ E.	.11
		Winter	61	19	14	60	37	44	41	75	...	N. 72 58 W.	$.16\frac{1}{2}$	N. 52 W.	.05
		The year[1]	...	...	...	...	...	...	...	...	...	N. 82 35 W.	.12		
	Two preceding combined.	Spring	478	128	72	143	450	132	114	195	176	N. 53 8 W.	$.05\frac{1}{2}$	N. $65\frac{1}{2}$ E.	.09
		Summer	444	138	110	105	535	176	343	291	215	N. 88 0 W.	.17	N. 77 W.	$.04\frac{1}{2}$
		Autumn	463	90	63	140	547	156	211	239	48	S. 77 5 W.	.14	S. $21\frac{1}{2}$ W.	.03
		Winter	375	49	64	78	425	167	144	207	142	S. 80 35 W.	$.15\frac{1}{2}$	S. $50\frac{1}{2}$ W.	$.03\frac{1}{2}$
		The year[1]	...	...	...	...	...	...	...	...	...	S. 88 2 W.	.12		
16(*a*). Moose Factory.		Spring	94	97	60	46	7	57	40	86	65	N. 7 56 E.	.26	N. 48 E.	.23
		Summer	27	24	23	18	2	76	11	42	52	N. 82 54 W.	.15	S. $11\frac{1}{2}$ W.	.09
		Autumn	27	23	8	44	5	55	8	70	33	N. 66 35 W.	$.16\frac{1}{2}$	S. $25\frac{1}{2}$ W.	.04
		Winter	14	32	13	61	2	93	21	154	57	N. 73 30 W.	.27	S. 78 W.	.12
		The year[1]	...	...	...	...	...	...	...	...	...	N. 51 19 W.	.17		

[1] Computed from the resultants for the seasons.

(Nos. 17, 18.) **Southern Labrador.**

Observed at the following places, viz.:—

Rigolet, by H. Connelly, for an aggregate period of $2\frac{1}{12}$ years, in the years 1859 to 1863 inclusive.
Winowkupa, by the same, from October, 1865, to May, 1866, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
17. Winowkupa.	Spring	2	40	55	9	19	6	8	112	1	N. 1° 17′ W.	.32		
	Oct. & Nov.	1	15	18	14	4	11	23	97	0	N. 46 8 W.	.46		
	Winter	0	32	20	18	10	8	13	169	0	N. 39 9 W.	.49		
18. Rigolet.[1]	Spring	234	130	80	4	14	13	26	286	63	N. 7 7 W.	$.59\frac{1}{2}$	N. $55\frac{1}{2}$° E.	.13
	Summer	143	249	54	14	7	9	13	210	41	N. 9 13 E.	.61	S. $76\frac{1}{2}$ E.	.38
	Autumn	116	66	34	16	13	20	20	227	19	N. 23 45 W.	$.58\frac{1}{2}$	S. 64 W.	.15
	Winter	121	40	60	9	13	8	22	487	17	N. 30 36 W.	.70	N. 79 W.	.35
	The year[2]	...	...	...	...	...	...	...	...	...	N. 13 45 W.	.60		

[1] Surface winds and motion of clouds combined in some of the months.
[2] Computed from the resultants for the seasons.

(Nos. 19 to 25.) **Atlantic Ocean.**

Computed from observations, for an aggregate period of over 4 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W	Calm or variable.			Direction.	Force.	
19. Longitude 20° to 65° W.																						
Autumn	7	10	11	8	7	16	8	9	12	25	31	26	32	23	15	13	6	S. 69° 9′ W.	.30	N. 28½° W.	.12½	86
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 4 W.	.31	....	...	325
20. Longitude 20° to 55° W.																						
Spring	5	5	9	8	13	25	29	15	11	23	14	17	12	10	3	18	2	S. 15 59 E.	.23	S. 89½ E.	.28½	73
Summer	10	3	4	9	2	6	11	40	26	28	29	68	23	28	18	22	24	S. 55 44 W.	.40	S. 86½ W	.11	117
21. Longitude 20° to 40° W.																						
Winter	3	1	0	7	0	8	6	10	11	20	20	21	20	7	6	5	1	S. 46 18 W.	.48	S. 48¼ W.	.17	49
22. Longitude 15° to 20° W.																						
Spring	3	5	5	7	8	14	17	13	14	17	13	16	11	13	6	5	9	S. 11 51 W.	.27	S. 66½ E.	.09	59
Summer	3	6	0	7	6	4	4	31	19	19	11	23	19	15	6	4	3	S. 34 19 W.	.41	S. 41½ W.	.14	60
Autumn	2	4	2	4	9	7	9	12	4	4	2	12	5	10	10	5	7	S. 23 26 W.	.09	N. 34 E.	.18	36
Winter	3	1	2	4	5	10	8	12	12	11	10	20	19	11	7	4	19	S. 43 16 W.	.33	S. 84½ W.	.09	53
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 53 W.	.27			
23. Longitude 10° to 15° W.																						
Spring	12	10	3	9	16	10	17	23	26	28	13	19	24	25	17	20	11	S. 48 43 W.	.20	N. 78 W.	.03	94
Summer	8	11	11	19	12	17	16	23	13	25	17	41	28	17	14	16	12	S. 47 24 W.	.18	N. 35 W.	.02	100
Autumn	6	3	10	16	21	18	22	17	12	6	27	29	19	12	7	8	2	S. 4 22 W.	.20	S. 61½ E.	.13	78
Winter	9	10	11	10	7	17	6	19	18	20	19	32	14	29	11	19	6	S. 64 49 W.	.22	N. 61 E.	.08½	86
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 29 W.	.19			
24. Longitude 0° to 10° W.																						
Spring	13	12	9	17	17	8	11	5	23	11	15	6	27	7	21	4	6	N. 54 53 W.	.05	N. 60½ E.	.11	71
Summer	17	13	16	19	17	13	9	10	13	23	29	30	44	33	16	9	17	S. 84 34 W.	.22	N. 86 W.	.09	109
Autumn	5	3	16	10	7	11	4	10	5	5	18	6	22	12	11	7	7	S. 77 4 W.	.13	S. 50 E.	.01	53
Winter	26	8	4	12	13	6	14	17	26	19	24	16	26	15	13	10	3	S. 63 55 W.	.17	S. 19 W.	06	84
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 18 W.	.14			
25. Longitude 0° to 65° W.																						
January	12	10	9	8	10	13	14	25	22	18	20	32	19	19	18	10	13	S. 45 57 W.	.23	S. 43 E.	.03	91
February	16	7	7	18	12	23	18	30	36	47	38	43	44	26	11	19	14	S. 40 14 W.	.33	S. 14 W.	.11½	136
March	4	4	3	17	7	18	20	20	25	30	15	23	29	17	13	18	6	S. 31 58 W.	.28	S. 19½ E.	.10½	90
April	13	11	7	1	23	10	20	14	14	29	12	14	17	18	11	5	10	S. 17 40 W.	.17	S. 10 E.	.13½	76
May	16	17	16	23	24	29	34	22	35	20	28	21	28	20	23	25	12	S. 4 45 E.	.10	N. 12 E.	.19½	131
June	20	16	17	30	21	25	21	56	48	43	44	70	35	38	24	19	20	S. 35 5 W.	.25½	S. 28 E.	.08	182
July	13	9	7	17	13	11	9	21	15	40	26	65	44	31	18	13	19	S. 65 29 W.	.36	S. 85½ W.	.14½	124
August	5	8	4	7	3	4	5	27	8	12	16	25	34	23	9	19	14	S. 67 16 W.	.33	N. 84 W.	.12	74
September	5	9	15	7	8	21	24	22	13	15	23	28	31	20	18	10	2	S. 43 1 W.	.18	N. 8 E.	.06	90
October	10	6	13	22	30	26	18	13	14	20	30	23	20	18	12	11	15	S. 6 5 E.	.13	N. 3 E.	.20	100
November	5	5	11	9	6	5	1	13	6	5	25	22	27	19	13	12	5	S. 87 22 W.	.34	N. 51¼ W.	.20	63
December	13	3	1	7	3	5	2	3	9	5	15	14	16	17	8	9	2	N. 85 17 W.	.36	N. 46 W.	.24½	44
The year	132	105	110	166	160	190	186	266	245	284	292	380	344	266	178	170	132	S. 52 41 W.	.23	....	...	1201

[1] Computed from the resultants for the seasons.

(Nos. 26 to 48.) **Ireland** south of latitude 55°.

Observed at the following places, viz.:—

Armagh, at the Coast-guard Observatory, during the year 1851.

Athy, by Houghton, during the year 1851.

Ballina, at the Ordnance Survey Office, from May to September inclusive, in the year 1838.

Bencorr, by James Crean and James Glaisher, from July 18 to August 31, 1830.

Cahirciven, at the Coast-guard Station, in the year 1851.

Castletownshend, at the Coast-guard Station, in the year 1851.

Cork, at the Barracks, in connection with the Ordnance Survey, from June, 1840, to October, 1841, inclusive, and during the years 1857 to 1867 inclusive.

Courtown, at the Coast-guard Station, in the year 1851.

Cuilcagh, from June 17 to September 13, 1828.

Donagadee, at the Coast-guard Station during the year 1851.

Divis, from September 1 to November 13, 1825.

Dublin. There are three series of observations from this city, one made at the Coast-guard Observatory during the year 1851, and another at the Ordnance Survey Office, Phœnix Park, for 22 years, from 1831 to 1852 inclusive. The latter were originally recorded for 16 points of the compass, but were reduced, for publication, to eight points, in the same manner as at Nijnii Taguilsk (Zone 7, No. 126). They were also reduced so as to be expressed in parts of 100 (or parts of 1000, by removing the decimal point). Beside the record of the number of observations, showing the relative frequency of the different winds, Whewell's anemometer was used after the year 1839, and Lind's was added in 1845. The third series extends from the year 1857 to 1867 inclusive, at 9½ o'clock A. M.

Dunmore, at the Coast-guard Station, during the year 1851.

Forth Mountain, from October 17 to November 2, 1829.

Hill of Howth, from November 29 to December 27, 1829.

Keeper, from September 19 to December 27, 1830, and from June 1 to July 9, 1831.

Killough, at the Lighthouse during the year 1851.

Killybegs, at the Lighthouse during the year 1851.

Kilrush, at the Ordnance Survey Office, from April, 1840, to December, 1841.

Kippure, from January 11 to July 16, 1829.

Knockanaffrin, from August 12 to October 5, 1829.

Limerick, at the Ordnance Survey Office, from 1839 to 1842 inclusive.

Markree, at the Coast-guard Observatory, in the year 1851

Milltown, during the years 1867 and 1868.

Nephin, from October 6 to November 2, 1828.

Portarlington, by Dr. Hanlon, during the year 1851.

Sawel, from September 8 to 19, 1827.

Slieve Donard, from August 27 to November 19, 1826.

Slieve League, From November 23, 1827, to January 5, 1828.

Tara Hill, from November 8 to 20, 1829.

Westport, at the Lighthouse, during the year 1851.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
26. Milltown.	The year	133	...	116	...	284	...	199	...	...	S. 28° 47′ W.	.23½	....	...	731
27. Ballina.	May	59	415	22	43	13	10	22	6	...	N. 51 47 E.	20	....	...	31
	Summer	77	25	12	38	102	124	132	42	...	S. 64 27 W.	39	....	...	92
	September	19	18	0	30	67	30	13	3	...	S. 1 49 W.	42	....	...	30

(Nos. 26 to 48.) **Ireland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
28. Markree.	Summer	14	5	4	17	14	15	10	21	...	S. 75° 4′ W.	.16	N. 2½° W.	.12	92
	Winter	12	4	4	19	19	23	9	10	...	S. 24 15 W.	.30	S. 13¾ E.	.11½	90
	The year	13	4	4	18	17	19	10	16	...	S. 43 28 W.	.22	....	...	365
29. Killybegs.	Summer	15	9	14	7	8	13	21	14	...	N. 58 22 W.	.17	N. 39¾ E.	.08½	92
	Winter	11	6	8	9	13	19	18	15	...	S. 73 29 W.	.25	S. 23 W.	.10	90
	The year	13	8	11	8	10	16	20	15	...	N. 83 20 W.	.20	....	...	365
30. Armagh.	Summer	12	9	7	6	16	19	18	15	...	N. 82 20 W.	.25	N. 83 E.	.05	92
	Winter	6	5	2	5	26	35	12	10	...	N. 86 11 W.	.35	S. 85 W.	.05	90
	The year	9	7	4	5	21	27	15	12	...	N. 84 40 W.	.30	....	...	365
31. Killough.	Summer	11	7	14	12	16	18	8	14	...	S. 17 35 W.	.12	S. 87½ E.	.16½	92
	Winter	9	4	4	5	18	25	12	24	...	S. 74 0 W.	.38	N. 89½ W.	.16	90
	The year	10	5	9	8	17	21	10	19	...	S. 62 19 W.	.23	....	...	365
32. Donagadee.	Summer	23	6	5	13	11	14	16	11	...	N. 77 51 W.	.16	N. 49 E.	.12½	92
	Winter	9	7	4	7	14	25	26	9	...	S. 65 43 W.	.40	S. 45 W.	.15½	90
	The year	16	7	4	10	13	19	21	10	...	S. 77 51 W.	.26	....	...	365
33. Lat. 54° to 55°.[1]	Spring	59	15	22	43	13	10	22	6	...	N. 51 47 E.??	.20	N. 56 E.	.35	31
	Summer	550	267	311	474	527	744	620	575	...	S. 71 18 W.	.18½	N. 73½ W.	.04½	626
	Autumn	63	80	68	179	172	280	164	234	2	S. 52 35 W	.28	S. 43 W.	.13	206
	Winter	97	54	54	95	189	264	165	154	...	S. 56 35 W.	.33½	S. 53 W.	.18½	482
	The year[2]	...	...	...	...	......	......	...	...	...	S. 60 51 W.	.22	....	...	1345
34. Bencorr.	Summer	19	33	13	22	36	107	45	53	...	S. 65 57 W.	.35½	....	...	45
35. Westport.	Summer	10	10	14	10	3	3	32	19	...	N. 46 41 W.	.27	N. 72 W.	.08	92
	Winter	13	4	12	10	6	8	26	21	...	N. 64 7 W.	.27	S. 70 W.	.13	90
	The year	11	7	13	10	4	5	29	20	...	N. 36 58 W.	.20	....	...	365
36. Portarlington.	Summer	5	28	2	11	7	14	13	21	...	N. 28 38 W.	.17	N. 78 E.	.18	92
	Winter	5	11	1	4	10	19	20	30	...	N. 79 49 W.	.44	S. 81¼ W.	.18	90
	The year	5	19	1	7	9	16	16	25	...	N. 67 2 W.	.28	....	...	365
37. Athy.	Summer	13	1	2	12	16	12	25	19	...	S. 80 42 W.	.36	N. 18½ W.	.11½	92
	Winter	7	2	1	15	28	11	23	13	...	S. 43 6 W.	.39	S. 23 E.	.13	90
	The year	10	2	1	13	22	12	24	16	...	S. 62 18 W.	.36	....	...	365
38. Dublin. Phœnix Park,* 1831 to 1852.	January	370	229	961	913	1010	2039	2891	810	777					
	February	501	335	1101	768	859	1824	2909	1201	503					
	March	632	618	1359	623	710	1485	2675	1204	674					
	April	847	828	1940	699	508	1091	2129	1267	690					
	May	871	1162	2170	630	568	848	1975	1023	753					
	June	786	509	1343	660	838	1416	2639	1053	756					
	July	697	318	919	434	609	1409	3129	1751	734					
	August	623	271	1220	471	597	1627	2739	1564	888					
	September	622	566	1428	789	784	1348	2525	1013	925					
	October	760	386	603	672	855	1639	3132	1206	747					
	November	545	237	942	866	856	1923	3102	845	684					
	December	381	230	764	943	1092	2129	2832	833	795					
	Spring	790	869	1833	650	595	1142	2260	1165	706	N. 69 48′ W.	.10½	N. 58½ E.	.18	
	Summer	702	266	1161	521	681	1484	2836	1456	793	S. 88 1 W.	.31	N. 49 W.	.07	
	Autumn	642	396	991	776	832	1636	2920	1022	785	S. 73 19 W.	.31	S. 54 W.	.05	
	Winter	417	265	942	875	987	1997	2877	948	692	S. 61 29 W.	.36½	S. 29½ W.	.13½	
	The year	638	474	1229	706	774	1565	2723	1147	744	S. 76 59 W.	.26			
	9 A. M.	3275	2625	5490	3980	4190	8575	13465	5120	3950					
	3 P. M.	3825	2780	6555	4745	4270	8100	11625	6060	2720					
	9 P. M.	2835	2365	4255	3765	3610	8795	11895	4990	8180					
Obs'ty, 1851.	Summer	2	10	12	13	8	23	11	19	...	S. 48 37 W.	.17	N. 41¼ E.	.19	92
	Winter	2	1	2	14	14	38	14	13	...	S. 43 56 W.	.54	S. 42 W.	.18	90
	The year	2	6	7	14	11	31	13	16	...	S. 44 48 W.	.36	....	...	365
1857 to 1867.	Spring	7	7	17	7	6	19	18	8	4	S. 56 22 W.	.13	N. 63 E.	.15	
	Summer	6	4	9	6	6	21	24	11	5	S. 74 29 W.	.34½	N. 57 W.	.10	
	Autumn	4	4	11	8	7	23	19	7	8	S. 50 25 W.	.29½	S. 25½ E.	.04½	
	Winter	4	3	7	9	7	25	23	5	7	S. 53 21 W.	.40	S. 39½ W.	.12	
	The year	21	18	44	30	26	88	84	31	24	S. 59 12 W.	.28½			

[1] Computed from observations at Nephin, Ballina, Slieve League, Markree, Slieve Donard, Killybegs, Cuilcagh, Sawel, Armagh, Divis, Killough, and Donagadee.

[2] Computed from the resultants for the seasons.

* For note to this reference see (*) at foot of next page.

(Nos. 26 to 48.) **Ireland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
39. Latitude 53° to 54°.[1]	Spring	790	869	1823	650	595	1142	2260	1165	706	N. 69° 47′ W.	.11	N. 66° E.	.15	2024
	Summer	3732	4726	3081	4161	3826	5979	10681	8251	823	N. 80 28 W.	.26	N. 15½ W.	.07	2428
	Autumn	642	396	991	776	832	1636	2920	1022	785	S. 73 19 W.	.31	S. 41½ W.	.09	2002
	Winter	3039	2262	2567	4305	5773	7161	10245	7929	692	S. 75 9 W.	.32	S. 49½ W.	.09½	2372
	The year[3]	...	...	...	...	...	...	...	...	...	S. 84 17 W.	.24	......	...	8826
40. Kilrush.	Spring	42	37	32	26	29	137	75	68	...	S. 78 57 W.	.33	S. 29 W.	.06	153
	Summer	94	39	46	31	43	188	217	194	...	N. 81 10 W.	.46	N. 63½ W.	.17½	276
	Autumn	47	31	30	22	29	106	60	67	...	S. 88 24 W.	.30	S. 75 W.	.05	152
	Winter	79	80	37	30	72	118	47	56	...	S. 88 26 W.	.11	N. 89 E.	.18½	180
	The year[3]	...	...	...	...	...	...	...	...	...	S. 88 38 W.	.29½	......	...	761
41. Limerick.	Spring	73	164	56	81	154	157	220	144	...	S. 81 12 W.	.20	N. 70 E.	.09	368
	Summer	77½	77	23	30½	117	212	315½	201½	...	S. 88 25 W.	.49	N. 78¾ W.	.21	368
	Autumn	72	141	38	83	133½	178	230	155½	...	S. 82 19 W.	.26½	N. 38½ E.	.03½	364
	Winter	60	114	67	68½	188½	195½	191	92½	...	S. 49 35 W.	.26½	S. 36 E.	.13½	361
	The year	282½	496	184	263	593	742½	956½	593½	...	S. 77 28 W.	.29	.. ...	...	1461
42. Dunmore.	Summer	15	8	14	5	7	18	8	16	...	N. 45 27 W.	.13	N. 68½ E.	.21½	92
	Winter	16	4	3	5	14	20	22	16	...	S. 87 41 W.	.38	S. 68¾ W.	.11	90
	The year	15	6	9	5	11	19	20	16	...	N. 84 43 W.	.28	......	...	365
43. Courtown.	Summer	13	17	5	7	8	23	15	13	...	N. 74 52 W.	.19	N. 45½ E.	.15½	92
	Winter	7	5	4	4	18	23	24	16	...	S. 69 42 W.	.44	S. 51½ W.	.15	90
	The year	10	11	4	6	13	23	19	14	...	S. 78 41 W.	.30	......	...	365
44. Latitude 52° to 53°.[2]	Spring	230	402	176	214	366	588	590	424	...	S. 80 16 W.	.23½	S. 3 E.	.06	521
	Summer	451	290	173	165	398	988	1185	975	...	N. 86 22 W.	.45	N. 68 W.	.17	836
	Autumn	328	417	162	298	421	840	704	686	...	S. 83 58 W.	.29	N. 9 W.	.00½	689
	Winter	338	438	233	243	598	733	585	390	...	S. 61 15 W.	.21	S. 58 E.	.12½	749
	The year[3]	...	..	...	...	...	...	...	...	...	S. 82 54 W.	.29	......	...	2795
45. Cahirciven.	Summer	19	9	12	9	12	18	16	14	...	N. 73 18 W.	.13	N. 6 E.	.12	92
	Winter	8	8	13	12	12	20	17	10	...	S. 38 32 W.	.18	S. 25 E.	.06½	90
	The year	9	8	13	10	12	19	17	12	...	S. 59 39 W.	.16	......	...	365
46. Castletownshend	Summer	8	9	11	12	2	37	15	6	...	S. 47 18 W.	.27	S. 67 E.	.12½	92
	Winter	13	5	3	6	5	35	21	13	...	S. 79 46 W.	.42	N. 59½ W.	.11½	90
	The year	10	7	7	9	3	36	18	9	...	S. 66 47 W.	.34	......	...	365

[1] Observed at Athy, Bencorr, Dublin (2 stations), Hill of Houth, Kippure, Portarlington, and Westport.
[2] Observed at Courtown, Dunmore, Forth Mountain, Keefer, Kilrush, Knockanaffrin, Limerick, and Tara Hill.
[3] Computed from the resultants for the seasons.

* (*Note to Phœnix Park, Dublin, preceding page.*) Comparison of results afforded by the anemometers of Whewell and of Lind, with those computed from the number of observations only.

Months and year.	1840 to 1852. Number of observations. Direction of resultant.		Whewell's Anemometer. Direction of resultant.		1845 to 1852. Number of observations. Direction of resultant.		Whewell's Anemometer. Direction of resultant.		Lind's Anemometer. Direction of resultant.	
January	S. 53° 8′ W.	.42½	S. 53° 45′ W.	.42½	S. 36° 3′ W.	.39	S. 45° 34′ W.	.41	S. 33° 49′ W.	.02½
February	S. 67 0 W.	.34	S. 66 9 W.	.29½	S. 69 39 W.	.50	S. 75 26 W.	.47½	S. 69 2 W.	.02½
March	S. 80 45 W.	.19½	S. 76 35 W.	.20½	S. 89 13 W.	.18	S. 79 59 W.	.19½	S. 51 12 W.	.01
April	N. 59 19 W.	.05½	S. 70 40 W.	.11	N. 47 11 W.	.04	S. 46 38 W.	.07	N. 89 49 W.	.00
May	N. 38 37 W.	.01½	N. 86 2 W.	. 9½	S. 75 7 W.	.08	N. 89 3 W.	.12½	S. 64 49 W.	.01
June	S. 75 30 W.	.22	S. 77 33 W.	.20½	S. 49 11 W.	.24	S. 76 45 W.	.19	S. 65 28 W.	.01
July	S. 88 38 W.	.35½	S. 87 2 W.	.22	S. 72 23 W.	.26½	S. 85 25 W.	.19	S. 68 3 W.	.01
August	S. 80 21 W.	.32½	S. 78 48 W.	.18	S. 79 32 W.	.31	S. 79 10 W.	.19	S. 75 10 W.	.01
September	S. 69 32 W.	.13	S. 74 18 W.	.12½	S. 54 16 W.	.09	S. 87 33 W.	.10	S. 86 31 W.	.01
October	S. 79 13 W.	.31½	N. 89 56 W.	.20½	S. 68 59 W.	.29½	S. 86 20 W.	.22	S. 75 50 W.	.01
November	S. 65 34 W.	.37½	S. 68 18 W.	.21½	S. 70 7 W.	.42½	S. 73 26 W.	.29½	S. 61 12 W.	.01½
December	S. 46 3 W.	.37	S. 47 48 W.	.29½	S. 53 26 W.	.38½	S. 47 59 W.	.33	S. 37 50 W.	.01½
The year	S. 70 40 W.	.303	S. 70 15 W.	.250½	S. 66 24 W.	.307	S. 70 17 W.	.269½	S. 58 26 W.	.14½

(Nos. 26 to 48.) **Ireland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
47. Cork.	Spring	38	117	104	215	123	209	132	282	...	S. 53° 50′ W.	.13	S. 82° E.	.11	1104
	Summer	76	53	35	140	183	251	219	466	...	S. 88 18 W.	.39	N. 74 W.	.18½	1196
	Autumn	75	92	91	214	147	260	116	356	...	S. 69 42 W.	.19	S. 80½ E.	.03½	1154
	Winter	70	115	50	195	116	277	101	272	...	S. 63 39 W.	.20½	S. 46 E.	.04	1080
	The year[2]	...	...	...	...	...	...	...	...	...	S. 73 55 W.	.22			
48. Latitude 51° to 52°.[1]	Spring	38	117	104	215	123	209	132	282	...	S. 53 50 W.	.13	S. 82 E.	.11	1104
	Summer	103	71	58	161	197	306	250	486	...	S. 87 3 W.	.36	N. 61½ W.	.16	1380
	Autumn	75	92	91	214	147	260	116	356	...	S. 69 42 W.	.19	S. 80½ E.	.03½	1154
	Winter	91	128	66	213	133	332	139	295	...	S. 65 1 W.	.22	N. 86½ E.	.02	1260
	The year[2]	...	...	...	...	...	...	...	...	...	S. 67 23 W.	.24	....	...	4898

[1] Observed at Cahirciven, Castletownshend, and Cork, and the annual resultant computed from the annual resultants at these places by plotting.
[2] Computed from the resultants for the seasons.

(Nos. 49 to 55.) **Irish Sea, Scotland,** south of latitude 55°, and **Wales.**

Observed at the following places, viz.:—

Aberavon, Wales, for a period of three months in autumn, date and name of observer not preserved.
Calf of Man, Irish Sea, by W. Cumming, from January to September, 1868, inclusive.
Isle of Man, Irish Sea, from the year 1822 to 1831 inclusive (Edinburgh Philosophical Journal).
Slogarie, Scotland, by Thomas R. Bruce, for 39 months in the years 1864 to 1868 inclusive.
Swansea, Wales, by Jenkins, for a period of six years—1842 to 1848.
Lampeter, Wales, during the year 1868.
Llandudno, Wales, during the years 1867 and 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
49. Isle of Man.	Spring	206	...	273	...	211	...	228	...	...	S. 83° 40′ E.	.05	....	...	920
	Summer	227	...	186	...	280	...	227	...	...	S. 37 36 W.	.07	....	...	920
	Autumn	220	...	198	...	213	...	276	...	...	N. 84 52 W.	.08½	....	..	910
	Winter	238	...	167	...	234	...	237	...	...	N. 86 44 W.	.08	....	...	902
	The year	891	...	824	...	938	...	968	...	...	S. 71 56 W.	.04	....	...	3652
50. Calf of Man.	Spring	7	4	5	13	19	14	19	9	2	S. 39 48 W.	.31	S. 59½° W.	.15	
	Summer	10	1	13	7	15	19	14	10	3	S. 45 26 W.	.24	S. 86 W.	.10½	
	September	1	7	9	4	4	2	1	1	1	S. 83 22 E.	.46	N. 78½ E.	.54	
	Jan.& Feb.	2	2	7	4	5	17	16	7	0	S. 62 8 W.	.41	S. 84½ W.	.29	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 23 3 W.	.18			
51. Slogarie.	Spring	21	56	35	20	22	63	36	50	2	N. 60 39 W.	.10	N. 45 E.	.12	
	Summer	14	40	22	32	21	78	46	46	8	S. 68 28 W.	.20½	S. 23½ W.	.04	
	Autumn	17	34	23	27	17	73	43	33	4	S. 65 46 W.	.21	S. 21 W.	.04½	
	Winter	29	42	17	24	14	89	44	35	5	S. 81 15 W.	.23	N. 87 W.	.05½	
	The year	81	172	97	103	74	303	169	164	19	S. 78 26 W.	.18			
52. Swansea.	Spring	76	192	28	198	38	298	93	171	...	S. 65 8 W.	.12	S. 67 E.	.06	460
	Summer	71	101	11	100	27	449	140	244	...	S. 78 8 W.	.43	S. 76 W.	.26	584
	Autumn	34	161	38	240	23	247	82	262	...	S. 74 8 W.	.12	S. 82 E.	.05	546
	Winter	61	172	60	225	25	163	74	261	...	N. 26 2 W.	.07	N. 56½ E.	.16	542
	The year[1]	...	...	...	...	...	...	1	...	...	S. 81 4 W.	.17	....	...	2132
53. Aberavon.	Autumn	7	14	5	12	3	11	1	11	...	N. 57 35 E.	.13	....	...	91
54. Lampeter.	The year	57	...	87	...	107	...	115	...	...	S. 29 15 W.	.16	....	...	366
55. Llandudno	The year	107	...	156	...	43	...	425	...	...	N. 76 37 W.	.38	....	...	731

[1] Computed from the resultants for the seasons.

(Nos. 56 to 133.) **England.**

Observed at the following places, viz.:—

Alderly Rectory, during the year 1821.

Aldershot Camp, during the years 1867 and 1868.

Allenheads, during the years 1867 and 1868.

Barnstable, during the years 1867 and 1868.

Bath, during the years 1867 and 1868.

Boston, during December, 1854, and the years 1855, 1856, 1867 and 1868.

Bournemouth, during the year 1867.

Bristol, during the years 1777 and 1778.

Bushy Heath, by Col. Beaufroy, during the years 1818 to 1822 inclusive, 1824 and 1825.

Cambridge, first six months of the year 1857

Camden Town, during the year 1868.

Cardington, during the years 1867 and 1868.

Carlisle, during the years 1835, 1867 and 1868.

Cheltenham, during the year 1837, by Moss.

Chiswick, by W. B. Booth, during the years 1827 and 1856.

Clifton, during the years 1853 to 1862 inclusive.

Cockermouth, during the years 1867 and 1868.

Delphen, during one year—date not preserved.

Derby, during the years 1812, 1813, 1867 and 1868.

Devonport, during the years 1841 and 1842.

Eastbourne, during the years 1867 and 1868.

Eccles, during the years 1867 and 1868.

Epping, by T. Squire, during the year 1826.

Exeter, during the months of October and November, 1857.

Gloucester, during the years 1867 and 1868.

Gosport, by W. Burney, during the years 1816 to 1820, and 1825 to 1829, both inclusive.

Grantham, during the year 1868.

Greenwich (Observatory), during the years 1800 to 1808 inclusive, 1841, 1842, from December, 1854, to November, 1855, inclusive, and during the years 1867 and 1868.

Halifax, during the years 1867 and 1868.

Hawarden, during the years 1867 and 1868.

Helston, during the years 1822 and 1825, by M. P. Moyle; also during the years 1857 to 1868 inclusive.

High Wycombe, during one year—date not preserved.

Holkham, during the years 1867 and 1868.

Hull, by William Lawton, during the years 1849 to 1852 inclusive.

Kendal, by Marshall, during the year 1828, and five years whose date is not preserved.

Keswick, during one year—date not preserved.

Kingsley Parsonage, during the year 1867.

Lampeter, during the year 1868.

Lancaster, by John Heaton, during the years 1816, 1817, and 1819 to 1821 inclusive.

Leeds, during the years 1867 and 1868.

Liverpool, by Abraham, from 1828 to 1834 inclusive; also by some observer whose name does not appear, from 1852 to 1855 inclusive.

London, by Howard, during the years 1806 to 1818 inclusive.

Manchester, by Thomas Hanson, during the years 1819, 1820 and 1821; also by observers whose names do not appear, during the year 1801, and three years whose date is not preserved.

Mansfield Woodhouse, during a period of ten years, whose date is not preserved.

Marlborough College, during the years 1867 and 1868.

New Malton, by J. Stockton, during the years 1819 to 1822 inclusive, and 1825.

North Shields, during the years 1867 and 1868.

(Nos 56 to 133.) **England.**—*Continued.*

Nottingham, during the months of January to June, 1811, and July to November, 1857, both inclusive, and during the year 1868.

Norwich, during the year 1868.

Osborne, during the years 1867 and 1868.

Otley, during the years 1867 and 1868.

Oxford, during the years 1828 to 1832 inclusive, 1854, 1867 and 1868.

Penzance, by E. C. Giddy, during the years 1807 to 1827 inclusive.

Ripon, during the years 1867 and 1868.

Royston, during the years 1867 and 1868.

Sidmouth, from September, 1811, to December, 1813, inclusive, and during the years 1867 and 1868.

Silloth, during the years 1867 and 1868.

Southwick, during a period of eleven years—date not preserved.

Stonyhurst, during the years 1867 and 1868.

Stratford, by R. Howard, from October, 1822, to May, 1826, inclusive.

Strathfield Turgiss, during the year 1868.

Streatly Vicarage, during the year 1868.

Sturbington, from December, 1843, to November, 1844, inclusive.

Thetford, during the year 1837, by Bailey.

Truro, during the years 1867 and 1868.

Tunbridge Wells, during the year 1868.

Wakefield, during the year 1867.

Weybridge Heath, during the year 1868.

Wilton, during the years 1867 and 1868.

Wisbech, during the years 1867 and 1868.

Worthing, during the years 1867 and 1868.

York, during the year 1868.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resul. to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
56. Cockermouth.																						
The year	101	...	...	...	123	...	...	...	173	...	...	...	334	...	...	...	...	S. 71° 10′ W.	.30½	....	...	731
57. Keswick.																						
The year	5	...	6	...	15	...	9	...	15	...	17	...	24	...	9	...	...	S. 43 21 W.	.26	....	...	1825
58. Carlisle.																						
The year	121	25	64	34	170	3	33	40	265	24	121	104	378	11	58	10	...	S. 52 16 W.	.28	....	...	1096
59. Kendal.																						
The year	202	...	418	...	77	...	102	...	148	...	687	...	322	...	140	...	...	S. 76 41 W.	.23	....	...	2191

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
60. Lancaster.																						
Spring	18	...	23	...	30	...	20	...	24	...	82	...	55	...	24	...	...	S. 57° 8′ W.	.30	N. 47½° W.	.08½	276
Summer	8	...	21	...	18	...	24	...	20	...	80	...	83	...	22	...	...	S. 62 22 W.	.43	N. 84 W.	.19½	276
Autumn	21	...	35	...	17	...	28	...	43	...	77	...	32	...	20	...	...	S. 34 32 W.	.26	N. 11 E.	.04	273
Winter	10	...	21	...	31	...	28	...	58	...	65	...	38	...	19	...	...	S. 20 23 W.	.34	S. 35½ E.	.12	270
The year	92	...	176	...	166	...	187	...	251	...	485	...	338	...	132	...	...	S. 40 11 W.	.29	....	...	1827
61. Allenheads.																						
The year	123	...	...	...	110	...	...	...	200	...	...	...	298	...	...	...	...	S. 67 44 W.	.28	....	...	731
62. Silloth.																						
The year	71	...	...	...	188	...	...	...	147	...	...	...	325	...	...	...	...	S. 60 59 W.	.21½	....	...	731
63. North Shields.																						
The year	186	...	...	...	116	...	...	...	163	...	...	...	266	...	...	...	...	N. 81 17 W.	.21	....	...	731
64. Ripon.																						
The year	205	...	...	...	128	...	...	...	109	...	...	...	289	...	...	...	...	N. 59 12 W.	.26	....	...	731
65. New Malton.																						
Spring	47	...	68	...	34	...	26	...	33	...	65	...	41	...	25	...	29	N. 15 9 W.	.04	N. 59½ E.	.16½	368
Summer	65	...	57	...	15	...	15	...	33	...	70	...	41	...	31	...	41	N. 53 43 W.	.16	N. 10 E.	.14½	368
Autumn	46	...	37	...	10	...	22	...	71	...	93	...	30	...	39	...	16	S. 53 43 W.	.24	S. 22 W.	.10½	364
Winter	29	...	35	...	22	...	12	...	62	...	97	...	44	...	42	...	18	S. 57 25 W.	.29	S. 38¾ W.	.14½	361
The year	242	...	239	...	96	...	90	...	259	...	409	...	215	...	152	...	124	S. 73 32 W.	.16	....	...	1826
66. England north of latitude 54°.[1]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 65 15 W.	.14½	N. 37 E.	.09	
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 0 W.	.26	N. 40½ W.	.10	
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 30 W.	.25	S. 21½ E.	.05	
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 15 W.	.30	S. 1½ E.	.10	
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 45 W.	.19			
67. Liverpool.																						
The year	536	539	405	315	490	384	1013	1244	909	461	740	420	752	958	1392	732	16	S. 65 3 W.	.12			
68. Hawarden.																						
The year	190	...	...	...	89	...	...	...	183	...	...	...	269	...	...	...	...	N. 87 46 W.	.24½	....	...	731
69. Eccles.																						
The year	179	...	...	...	136	...	...	...	144	...	...	...	272	...	...	...	...	N. 75 34 W.	.19	....	...	731

[1] Nos. 56 to 65 resultants combined by plotting.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction	Force.	
70. Manchester.																						
Spring	0	...	12	...	6	...	15	...	12	...	96	...	14	...	21	...	8	S. 46° 51′ W.	.53	S. 46° W.	.18	184
Summer	1	...	12	...	11	...	25	...	14	...	48	...	37	...	33	...	3	S. 60 8 W.	.36	N. 43½ W.	.08	184
Autumn	2	...	10	...	4	...	26	...	17	...	80	...	17	...	18	...	8	S. 39 1 W.	.50	S. 21 W.	.16	182
Winter	1	...	25	...	10	...	25	...	13	...	59	...	6	...	23	...	18	S. 26 27 W.	.23	N. 11¼ E.	.15½	180
The year	59	...	577	...	155	...	394	...	328	...	1627	...	513	...	390	...	195	S. 47 16 W.	.35	....	...	1461
71. Kingsley's Parsonage.																						
The year	65	...	...	...	69	...	...	...	108	...	...	...	123	...	...	...	...	S. 51 29 W.	.19	....	...	365
72. Stonyhurst.																						
The year	136	...	...	...	137	...	...	...	166	...	...	...	292	...	...	...	...	S. 79 3 W.	.21½	....	...	731
73. Halifax.																						
The year	147	...	...	...	155	...	...	...	159	...	...	...	270	...	...	...	...	S. 84 3 W.	.16	....	...	731
74. Otley.																						
The year	133	...	...	...	137	...	...	...	93	...	...	...	368	...	...	...	...	N. 80 11 W.	.32	....	...	731
75. Wakefield.																						
The year	70	...	...	...	58	...	...	...	78	...	...	...	159	...	...	...	...	S. 85 28 W.	.28	....	...	365
76. Leeds.																						
The year	205	...	...	...	106	...	...	...	160	...	...	...	260	...	...	...	...	N. 73 43 W.	.22	....	...	731
77. York.																						
The year	40	...	...	...	81	...	...	...	138	...	...	...	107	...	...	...	...	S. 14 52 W.	11	....	...	366
78. Mansfield Woodhouse.																						
The year	131	...	395	...	195	...	195	...	176	...	994	...	702	...	682	...	...	S. 84 26 W.	.37	....	...	3652
79. Hull.																						
The year	78	29	120	9	88	10	123	17	65	24	176	22	250	22	97	13	220	S. 77 39 W.	.15	....	...	1363

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
80. England, latitude 53° to 54°.[1]																						
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 77° 45′ W.	.21			
81. Holkham.																						
The year	215	...	...	...	91	...	...	...	256	...	...	...	172	...	...	...	..	S. 63 10 W.	.12½	....	...	731
82. Stratford.																						
Spring	31	...	69	...	53	...	25	...	12	...	59	...	25	...	89	...	5	N. 8 8 W.	.20	N. 61° E.	.26½	368
Summer	30	...	60	...	30	...	20	...	14	...	82	...	42	...	84	...	5	N. 57 53 W.	.23	N. 50 E.	.08½	367
Autumn	19	...	26	...	31	...	31	...	20	...	102	...	50	...	80	...	5	S 77 43 W.	.32	S. 89 W.	.05	364
Winter	23	...	40	...	36	...	22	...	16	...	78	...	63	...	77	...	6	N. 84 27 W.	.26	S. 0½ E.	.04	361
The year	103	...	195	...	150	...	98	...	62	...	321	...	180	...	330	...	21	N. 75 23 W.	.27	....	...	1460
83. Derby.[2]																						
The year	149	169	...	...	133	95	...	...	150	242	...	...	299	225	...	...	...	....	...	....	...	1462
84. Nottingham.[3]																						
Spring	4	...	18	...	18	...	23	...	16	...	21	...	13	...	16	...	...	S. 15 5 E.	.09	S. 89 E.	.19	92
Summer	6	3	10	1	4	0	5	0	4	4	7	15	14	2	14	3	...	N. 75 47 W.	.34	N. 45 W.	.23	92
Autumn	6	2	5	3	8	8	7	0	5	5	17	4	3	2	13	2	...	S. 36 18 W.	.09	N. 85 E.	.12	90
Winter	1	...	3	...	11	...	7	...	11	...	16	...	15	...	8	...	...	S. 52 16 W.	.42	S. 43 W.	.23	72
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 5 W.	.20	....	...	712
85. Alderly Rectory.																						
The year	63	...	...	...	45	...	...	...	167	...	...	...	86	...	...	...	...	S. 21 31 W.	.31	....	...	365
86. Wisbech.																						
The year	152	...	...	...	136	...	...	...	196	...	...	...	247	...	...	...	...	S. 68 23 W.	.17	....	...	731
87. Grantham.																						
The year	71	...	...	...	56	...	...	...	101	...	...	...	138	...	...	...	...	S. 69 54 W.	.24	....	...	366
88. Cardington.																						
The year	170	...	...	...	129	...	...	...	168	...	...	...	264	...	...	...	...	N. 89 9 W.	.18½	....	...	731
89. Boston and Cambridge.																						
Spring	49	4	47	0	16	4	23	10	20	2	37	2	20	2	30	3	0	N. 2 35 W.	.13	N. 66 E.	.23½	
Summer	14	4	19	0	9	0	8	3	19	6	53	3	34	3	34	0	0	S. 78 7 W.	.35½	S. 51 W.	.17	
Autumn	19	0	17	1	10	0	13	1	17	2	24	3	21	4	29	7	0	N. 70 21 W.	.23	North	.04	
Winter	23	0	19	1	13	0	9	4	37	11	28	7	41	6	47	9	9	N. 89 17 W.	.29½	S. 67 W.	.09	
The year[4]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 5 W.	.22			

[1] Nos. 67 to 79 combined by plotting.
[2] In the years 1812 and 1813 the N. and N. E. winds were united, the E. and S. E., etc. They are here classed as from the intermediate points N. N. E., E. S. E., etc.
[3] The seasons include the years 1811 and 1857 only, and the resultant for the year is computed from those for the seasons, combined with the observations for 1868, which were as follows, viz., N. 79, E. 59, S. 40, W. 138.
[4] Computed from the resultants for the seasons.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
	Relative Prevalence of Winds from the Different Points of the Compass.																					
90. Royston.																						
The year	172	...	...	...	79	...	...	...	193	...	...	...	287	...	...	...	...	S. 84° 14′ W.	.29	....	...	731
91. Thetford.																						
The year	85	...	83	...	65	...	82	...	118	...	130	...	73	...	95	...	...	S. 40 40 W.	.09	....	...	365
92. Norwich.																						
The year	78	...	...	...	54	...	...	...	125	...	...	...	109	...	...	...	...	S. 49 29 W.	.20	....	...	366
93. Southwick.																						
The year	249	...	492	...	291	...	376	...	276	...	1116	...	367	...	784	...	...	S. 77 29 W.	.23	....	...	4018
94. England, latitude 52° to 53°.[1]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 2 15 W.	.08	N. 69 E.	.21	
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 30 W.	.29	N. 68 W.	.10	
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 45 W.	.19	S. 10½ E.	.03	
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 30 W.	.31	S. 51 W.	.13½	
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 30 W.	.19			
95. Barnstable.																						
The year	128	...	...	...	131	...	...	...	217	...	...	...	255	...	...	...	...	S. 51 24 W.	.21½	....	...	731
96. Wilton.																						
The year	205	...	...	...	124	...	...	...	187	...	...	...	215	...	...	...	...	N. 78 49 W.	.13	....	...	731
97. Bristol.																						
The year	48	...	388	...	37	...	216	...	59	...	532	...	26	...	156	...	...	S. 17 19 W.	.11			
98. Clifton.																						
Spring	7	...	17	...	10	...	8	...	6	...	12	...	15	...	12	...	5	N. 30 14 W.	.09	N. 60 E.	.11	
Summer	7	...	7	...	5	...	6	...	7	...	17	...	25	...	15	...	3	S. 88 47 W.	.36½	S. 83 W.	.22	
Autumn	7	...	13	...	11	...	9	...	7	...	11	...	16	...	12	...	5	N. 58 12 W.	.07½	N. 77 E.	.08	
Winter	6	...	14	...	6	...	10	...	9	...	14	...	14	...	11	...	6	S. 75 16 W.	.10	S. 46 E.	.07	
The year	27	...	51	...	32	...	33	...	29	...	54	...	70	...	50	...	19	N. 81 23 W.	.14½			
99. Bath.																						
The year	148	...	...	...	140	...	...	...	149	...	...	...	294	...	...	...	...	S. 89 38 W.	.20	....	...	731
100. Gloucester.																						
The year	167	...	...	...	158	...	...	...	128	...	...	...	278	...	...	...	...	N. 72 0 W.	.17	....	...	731
101. Cheltenham.																						
The year	67	...	91	...	65	...	82	...	73	...	227	...	57	...	68	...	...	S. 34 55 W.	.19	....	...	365

[1] Nos. 81 to 93 resultants combined by plotting.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
102. Marlboro' College.																						
The year	191	...	...	...	158	...	...	...	140	...	...	...	242	...	...	...	...	N. 58° 45′ W.	.13½	....	...	731
103. Streatly Vicarage.																						
The year	81	...	...	...	61	...	...	...	97	...	...	...	127	...	...	...	...	S. 76 22 W.	.18½	....	...	366
104. Oxford.[1]																						
Spring	51	...	13	...	12	...	5	...	22	...	39	...	29	...	11	...	2	N. 69 27 W.	.26	N. 75° E.	.13	92
Summer	37	...	16	...	0	...	2	...	19	...	43	...	41	...	24	...	2	N. 79 11 W.	.42	N. 66 W.	.05	92
Autumn	39	...	10	...	5	...	2	...	25	...	35	...	36	...	24	...	6	N. 79 31 W.	.36	N. 66 E.	.02	91
Winter	12	...	13	...	7	...	7	...	18	...	27	...	65	...	29	...	2	S. 89 46 W.	.46½	S. 57½ W.	.11	90
The year	2324	...	3291	...	1106	...	556	...	2539	...	5984	...	2591	...	1020	...	314	S. 64 16 W.	.20	....	...	10228
105. Strathfield Turgiss.																						
The year	103	...	...	...	56	...	...	...	84	...	...	...	123	...	...	...	...	N. 74 10 W.	.19	....	...	366
106. Aldershot Camp.																						
The year	160	...	...	...	121	...	...	...	180	...	...	...	270	...	...	...	...	S. 82 21 W.	.19	....	...	731
107. High Wycombe.																						
The year	49	...	25	...	30	...	32	...	43	...	56	...	66	...	64	...	...	N. 85 14 W.	.22	....	...	365
108. Weybridge Heath.																						
The year	71	...	...	...	74	...	...	...	116	...	...	...	105	...	...	...	...	S. 34 34 W.	.08½	....	..	731
109. Chiswick.																						
Spring	13	...	34	...	18	...	17	...	21	...	47	...	18	...	14	...	...	S. 20 6 W.	.11	S. 86 E.	.12	
Summer	5	...	19	...	11	...	11	...	23	...	59	...	29	...	24	...	...	S. 56 14 W.	.37	S. 53 W.	.18½	
Autumn	18	...	20	...	19	...	23	...	21	...	33	...	26	...	21	...	...	S. 47 18 W.	.11	N. 76½ E.	.08	
Winter	20½	...	12½	...	13½	...	9½	...	17½	...	30½	...	21	...	25	...	...	N. 87 43 W.	.21	N. 27 W.	.11½	
The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 15 W.	.18½			
110. Camden Town.																						
The year	131	...	...	...	50	...	...	...	91	...	...	...	94	...	...	...	...	N. 47 44 W.	.16	....	...	366
111. London.																						
January	32	...	38	...	28	...	28	...	26	...	73	...	39	...	60	...	47					
February	17	...	21	...	21	...	23	...	27	...	100	...	37	...	50	...	38					
March	16	...	39	...	38	...	21	...	16	...	69	...	39	...	48	...	32					
April	36	...	67	...	33	...	34	...	14	...	55	...	24	...	47	...	44					
May	12	...	67	...	40	...	32	...	21	...	74	...	19	...	40	...	55					
June	25	...	49	...	22	...	22	...	9	...	74	...	39	...	68	...	48					
July	26	...	25	...	14	...	19	...	20	...	97	...	48	...	85	...	34					
August	17	...	31	...	18	...	14	...	18	...	98	...	53	...	96	...	21					
September	23	...	53	...	32	...	40	...	21	...	67	...	41	...	44	...	35					
October	18	...	53	...	27	...	35	...	30	...	87	...	43	...	38	...	36					
November	29	...	50	...	18	...	27	...	22	...	87	...	44	...	51	...	28					
December	29	...	37	...	28	...	24	...	10	...	99	...	46	...	58	...	39					
Spring	64	...	223	...	111	...	87	...	51	...	198	...	82	...	135	...	131	N. 10 59 E.	.06	N. 72½ E.	.18	1196
Summer	68	...	105	...	54	...	55	...	47	...	269	...	140	...	249	..	103	N. 82 52 W.	.31	N. 76 W.	.15	1196
Autumn	70	...	156	...	77	...	102	...	73	...	241	...	128	...	133	...	99	S. 72 48 W.	.13	S. 40½ E.	.05½	1183
Winter	78	...	96	...	77	...	75	...	63	...	272	...	122	...	168	...	124	S. 79 29 W.	.22	S. 53 W.	.07	1173
The year	280	...	580	...	319	...	319	...	234	...	980	...	472	...	685	...	457	N. 89 2 W.	.16	....	...	4748
112. Greenwich, 1800 to 1808.																						
The year	1461	1163	7689	1413	4980	741	1053	671	5840	2708	5174	2026	3741	1977	2411	226	...	S. 8 31 W.	.05	....	...	42975

[1] Seasons of 1854 only.

[2] Computed from the resultants for the seasons.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
113. Greenwich, 1841 to 1860.																						
January	3	...	3	...	1	...	2	...	4	...	10	...	3	...	2	...	3					
February	3	...	4	...	2	...	1	...	3	...	8	...	3	...	2	...	2					
March	4	...	4	...	3	...	2	...	2	...	8	...	3	...	3	...	2					
April	4	...	6	...	3	...	2	...	3	...	6	...	3	...	2	...	1					
May	4	...	7	...	3	...	2	...	3	...	7	...	2	...	1	...	2					
June	3	...	4	...	2	...	2	...	2	...	10	...	4	...	2	...	1					
July	3	...	4	...	1	...	2	...	3	...	10	...	4	...	2	...	3					
August	3	...	3	...	1	...	1	...	3	...	11	...	4	...	2	...	3					
September	4	...	5	...	2	...	1	...	2	...	7	...	2	...	2	...	4					
October	3	...	3	...	1	...	2	...	3	...	9	...	4	...	2	...	4					
November	4	...	4	...	2	...	2	...	3	...	8	...	2	...	2	...	3					
December	3	...	2	...	2	...	2	...	3	...	9	...	4	...	2	...	4					
Spring	12	...	17	...	9	...	6	...	8	...	21	...	8	...	6	...	5	N. 57° 24′ W.	.02½	N. 55° E.	.16	
Summer	9	...	11	...	4	...	5	...	8	...	31	...	12	...	6	...	7	S. 61 27 W.	.28	S. 60 W.	.10½	
Autumn	11	...	12	...	5	...	5	...	8	...	24	...	8	...	6	...	11	S. 68 35 W.	.14½	N. 30½ E.	.03	
Winter	9	...	9	...	5	...	5	...	10	...	27	...	10	...	6	...	9	S. 54 45 W.	.25	S. 39 W.	.08	
The year	41	...	49	...	23	...	21	...	34	..	103	...	38	...	24	...	32	S. 62 17 W.	.17			
114. Bushy Heath.																						
Spring	8	...	94	..	17	...	35	...	3	...	118	...	21	...	67	...	7	N. 80 31 W.	.12	N. 47 E.	.06½	
Summer	9	...	93	...	26	...	25	...	6	...	113	...	34	...	57	...	3	N. 75 36 W.	.13	N. 36 E.	.07	
Autumn	4	...	43	...	10	...	54	...	4	...	162	...	26	...	61	...	0	S. 53 8 W.	.36	N. 32 W.	.22½	
Winter	11	...	61	...	14	...	40	...	8	...	125	...	29	...	72	...	0	S. 76 45 W.	.24	S. 65 W.	.07	
The year	93	...	886	...	208	...	494	...	102	...	1365	...	340	...	834	...	118	S. 81 25 W.	.17			
115. Delphen.																						
The year	47	41	82	69	128	20	44	27	47	72	162	67	92	37	70	47	21	S. 60 24 W.	.08			
116. Epping.																						
Spring	147	...	...	...	70	...	...	...	64	...	...	...	57	...	...	...	...	N. 8 54 E.?	.25	N. 14 E.	.26	92
Summer	90	...	...	...	79	...	...	...	90	...	...	...	109	...	...	...	...	West?	.08	N. 84½ W.	.10½	92
Autumn	85	...	...	...	76	...	...	...	104	...	...	...	99	...	...	...	...	S. 50 26 W.?	.08	S. 39½ W.	.06	91
Winter	56	...	...	...	90	...	...	...	125	...	...	...	85	...	...	...	...	S. 4 9 E.?	20	S. 11 E.	.20	90
The year	378	...	...	...	315	...	...	..	383	...	...	...	350	...	...	...	...	S. 78 41 W.	.02½	....	...	365
117. Tunbridge Wells.																						
The year	80	...	...	...	63	...	...	...	109	...	...	...	114	...	...	...	...	S. 60 22 W.	.16	....	...	366
118. England, latitude 51° to 52°.[1]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 45 30 W.	.08	N. 60½ E.	.13	
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 30 W.	.26½	N. 74½ W.	.10	
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 15 W.	.16½	S. 17½ E.	.04	
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 0 W.	.21	S. 26½ W.	.06	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 10 W.	13½			
119. Penzance.																						
Spring	188	...	242	...	237	...	237	...	244	...	243	...	228	...	313	...	...	S. 86 17 W.	.02½	S. 6½ E.	.11½	1932
Summer	255	...	150	...	162	...	179	...	188	...	295	...	313	...	390	...	...	N. 74 25 W.	.21	N. 54 W.	.07½	1932
Autumn	161	...	160	...	213	...	220	...	248	...	293	...	234	...	382	...	...	S. 73 51 W.	.13	S. 16½ E.	.05	1911
Winter	137	...	229	...	158	...	199	...	159	...	314	...	329	...	370	...	...	N. 83 43 W.	.19	N. 78½ W.	.05	1895
The year	741	...	781	...	770	...	835	...	839	...	1145	...	1104	...	1455	...	...	N. 85 21 W.	.14	....	...	7670

[1] Nos. 95 to 117, resultants combined by plotting.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.			Direction.	Force.	
120. Helston, 1822 and 1825.																					
Spring	22	...	3	...	41	...	12	...	17	...	34	...	25	...	30	...	S. 79° 1′ W.	.10	N. 1° E.	.05	184
Summer	17	...	13	...	33	...	14	...	9	...	42	...	15	...	41	...	N. 73 3 W.	.12	N. 31 E.	.06½	184
Autumn	18	...	10	...	17	...	11	...	28	...	54	...	21	...	23	...	S. 62 35 W.	.27	S. 41 W.	.14	182
Winter	18	...	26	...	19	...	15	...	10	...	37	...	18	...	37	...	N. 54 46 W.	.15	N. 14 E.	.10½	180
The year	75	...	52	...	110	...	52	...	64	...	167	...	79	...	131	...	S. 82 15 W.	.15	....	...	730
121. Helston, 1822, 1825 and 1867 to 1868.																					
The year	612	...	272	...	858	...	252	...	517	...	957	...	962	...	681	...	S. 84 30 W.	.17½	....	...	5141
122. Truro.																					
The year[1]	218	...	...	...	145	...	...	...	133	...	...	...	235	...	...	...	N. 46 38 W.	.17	....	...	731
123. Devonport.																					
The year	879	361	697	250	898	571	1212	773	1460	750	1407	590	1215	990	2393	794	S. 77 24 W.	.17	....	...	730
124. Exeter.																					
Oct. & Nov.	16	...	10	...	4	...	2	...	12	1	2	...	4	3	5	1	N. 44 1 W.	.18	....	...	61
125. Sidmouth.[1]																					
Autumn	17	...	4	...	5	...	19	...	3	...	23	...	8	...	13	...	S. 73 15 W.?	.14	....	...	92
December	12	...	3	...	0	...	0	...	0	...	6	...	4	...	8	...	N. 37 10 W.??	.60	....	...	31
The year	304	...	...	...	155	...	...	...	245	...	...	...	362	...	...	...	S. 81 35 W.	.20	....	...	731
126. Southwestern England.[2]																					
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 30 W.	.06	S. 55½ E.	.11	
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 0 W.	.16½	S. 42½ W.	.01	
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 30 W.	.16	S. 5 E.	.07	
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 49 0 W.	.29½	N. 26 W.	.16	
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 30 W.	.16			
127. Bournemouth.																					
The year	106	...	...	...	34	...	...	...	82	...	...	...	143	...	...	...	N. 77 35 W.	.30½	....	...	365
128. Gosport.																					
Spring	125	...	310	...	155	...	227	...	132	...	278	...	222	...	207	...	N. 87 11 W.	.02	N. 87 E.	.13	460
Summer	158	...	202	...	85	...	156	...	122	...	446	...	244	...	243	...	S. 79 12 W.	.24	S. 65½ W.	.10	460
Autumn	174	...	156	...	132	...	116	...	117	...	312	...	230	...	281	...	N. 78 58 W.	.22	N. 50½ W.	.09	425
Winter	148	...	196	...	131	...	177	...	167	...	247	...	219	...	215	...	S. 79 25 W.	.11	S. 70 E.	.04	420
The year	605	...	147½	...	1126	...	172	...	503	...	161	...	926	...	161	...	S. 87 15 W.	.15	....	...	3227
129. Osborne.																					
The year	173	...	...	...	134	...	...	...	184	...	...	...	240	...	...	...	S. 84 4 W.	.14½	....	...	731

[1] Season and month for 1811 only.

[2] Nos. 119 to 125, resultants combined by plotting.

(Nos. 56 to 133.) **England.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
130. Sturbington.																					
The year	42	354	317	147	75	68	81	77	136	149	265	609	383	877	412	298	N. 67° 35′ W.	.43	....	...	366
131. Worthing.																					
The year	172	...	...	...	119	...	...	...	187	...	...	...	253	...	...	...	S. 83 37 W.	.18½	....	...	731
132. Eastbourne.																					
The year	152	...	...	...	131	...	...	...	184	...	...	...	264	...	...	...	S. 76 28 W.	.19	....	...	731
133. Southern and Southeastern England.[1]																					
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 82 0 W.	.23			

[1] Nos. 127 to 132, resultants combined by plotting.

(Nos. 134 to 138.) **France,** north of latitude 50°.

Observed at the following places, viz.:—

Abbeville, by M. Callary, from December, 1840, to November, 1850, inclusive.

Cambray, by Cleomede Evard, during the years 1847 and 1848.

Dunkerque, by Dr. Zandyck, during the years 1850 to 1854 inclusive, and 1859.

Lille, by Victor Meurin, during the years 1853, 1859 and 1860.

Place and kind of observations.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.
134. Abbeville.	Spring	78	0	144	0	85	0	90	0	88	0	95	0	166	0	174	0	N. 51° 32′ W.	.15	N. 5° E.	.09½
	Summer	67	0	118	0	44	0	49	0	89	0	102	0	288	0	171	0	N. 76 40 W.	.35½	N. 69 E.	.23½
	Autumn	60	0	123	0	83	0	133	0	136	0	149	0	104	0	125	0	S. 18 38 W.	.11½	S. 40 E.	.14
	Winter	67	0	95	0	105	0	174	0	94	0	98	0	143	0	119	0	S. 1 2 W.	.07½	S. 59½ E.	.14½
	The year	272	...	470	...	317	...	446	...	406	...	444	...	701	...	589	...	S. 88 13 W.	.13		
135. Dunkerque.	Spring	59	2	91	18	68	2	27	0	26	4	51	11	116	5	65	7	N. 25 38 W.	.19½	N. 40 E.	.17
	Summer	59	7	82	10	26	0	14	5	29	6	72	11	165	5	58	3	N. 67 41 W.	.33	N. 53½ E.	.14
	Autumn	30	1	72	1	43	4	43	9	56	6	64	8	98	3	90	8	N. 88 8 W.	.16	S. 43 E.	.05½
	Winter	36	1	31	0	65	0	50	0	53	5	114	4	116	3	58	5	S. 60 59 W.	.27	S. 13 W.	.18
	The year	184	11	276	29	202	6	136	14	164	21	301	34	495	16	271	23	N. 76 59 W.	.20		
136. Lille. Surface wind.	Spring	26	15	42	12	12	2	10	6	17	11	24	38	15	7	32	6	N. 45 0 W.	.17½	N. 10½ E.	.18½
	Summer	31	7	21	5	9	2	7	2	27	10	50	48	23	3	22	9	S. 77 57 W.	.32½	S. 86½ W.	.16½
	Autumn	15	8	31	10	8	8	26	15	28	10	31	25	14	7	23	2	S. 19 47 W.	.14	S. 55 E.	.13
	Winter	17	13	21	7	11	6	16	15	41	13	33	20	21	8	24	3	S. 38 26 W.	.20	S. 16 E.	.10
	The year	89	43	115	34	40	18	59	38	113	44	138	131	73	25	101	20	S. 69 39 W.	17		
Motion of clouds.[1]	Spring	7	8	6	8	4	2	10	1	5	2	8	9	6	6	6	4	N. 29 17 W.	.09	N. 43½ E.	.18
	Summer	6	4	3	3	0	4	4	2	5	7	17	25	8	1	2	3	S. 58 41 W.	.44	S. 50 W.	.27
	Autumn	4	5	4	5	1	0	7	3	15	7	11	10	4	4	12	2	S. 52 24 W.	.27	S. 22½ W.	.12
	Winter	10	3	13	5	0	5	6	2	8	2	6	8	5	6	5	5	N. 22 32 W	.11	N. 40 E.	.20
	The year	27	20	26	21	5	11	27	8	33	18	42	52	23	17	25	14	S. 71 4 W.	.19		
Aggregate.	Spring	33	23	48	20	16	4	20	7	22	13	32	47	21	13	38	10	N. 42 34 W.	.26	N. 1 E.	.23
	Summer	37	11	24	8	9	6	11	4	32	17	67	73	31	4	24	12	S. 72 17 W.	.35½	S. 66 W.	.17
	Autumn	19	13	35	15	9	8	33	18	43	17	42	35	18	11	35	4	S. 32 54 W.	.17	S. 39½ E.	.14
	Winter	27	16	34	12	11	11	22	17	49	15	39	28	26	14	29	8	S. 48 28 W.	.14	S. 53½ E.	.09
	The year	116	63	141	55	45	29	86	46	146	62	180	183	96	42	126	34	S. 70 13 W.	.17½		

[1] For the year 1853 only.

(Nos. 134 to 138.) **France.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
137. Cambray.	Spring	89	0	118	0	48	0	26	0	87	0	53	0	98	0	30	0	N. 7° 42′ W.	.09½	N. 24½° E.	.13½
	Summer	68	0	133	0	32	0	6	0	36	0	117	0	114	0	46	0	N. 54 7 W.	.22	N. 35 W.	.20
	Autumn	76	0	72	0	27	0	40	0	103	0	98	0	75	0	54	0	S. 65 3 W.	.15½	S. 64 W.	.08
	Winter	31	0	81	0	68	0	46	0	153	0	100	0	44	0	20	0	S. 10 40 E.	.29	S. 26 E.	.28½
	The year	264	...	404	...	175	...	118	...	379	...	368	...	331	...	150	...	S. 66 25 W.	.07½		
138. Northern France.[1]	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 35 15 W.	.17	N. 18½ E.	.15
	Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 45 W.	.30	N. 67½ W.	.16
	Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 15 W.	.13½	S. 24 E.	.08
	Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 27 15 W.	.16	S. 27½ E.	.15
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 15 W.	.14		

[1] Nos. 134 to 137, resultants combined by plotting.

(Nos. 139 to 143.) **Belgium.**

Observed at the following places, viz.:—

Alost, during the years 1839 and 1840.

Brussels, during the years 1772 to 1779, 1833 to 1846, and December, 1854, to November, 1857, all inclusive.

Ghent, during the years 1839, 1840 and 1841.

Louvain, during the year 1844.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
139. Ghent.																					
The year	195	49	214	133	355	71	144	81	348	193	518	200	441	289	274	107	S. 65° 36′ W.	.22	....	..	3612
140. Alost.																					
The year	104	168	41	178	30	90	24	107	60	152	98	469	111	284	89	187	N. 81 11 W.	.29½	....	...	730
141. Brussels. Surface wind exclusive of the years 1833 to 1844.																					
Spring	202	82	586	86	639	163	195	42	224	151	603	209	447	73	367	62	S. 9 0 W.	.01	N. 43° E.	.25½	
Summer	239	115	347	67	231	73	189	25	400	123	1105	429	491	108	339	56	S. 62 27 W.	.32	N. 61 W.	.12	
Autumn	99	37	467	83	373	83	347	49	459	252	1308	229	375	73	81	6	S. 21 29 W.	.36	S. 16½ E.	.15	
Winter	141	45	312	40	273	81	236	77	444	277	1121	307	506	79	322	29	S. 44 10 W.	.40	S. 48 W.	.14	
The year	681	279	1712	276	1516	400	967	193	1527	803	4137	1174	1819	333	1109	153	S. 43 54 W.	.27			
Surface wind, 1833 to 1844.																					
The year	3705	3753	10622	6947	7393	2045	3048	2315	4712	7957	18856	13643	13085	5988	6100	3361	S. 71 14 W.	.23½	....	...	113530
Motion of clouds.[1]																					
Spring	16	22	18	28	15	7	8	7	14	26	42	41	18	13	11	15	S. 75 2 W.	.15	N. 82½ E.	.24	
Summer	14	15	6	8	3	5	2	2	8	29	42	89	34	38	22	12	S. 81 35 W.	.57	S. 86 W.	.17½	
Autumn	16	10	6	18	14	10	1	5	2	25	32	46	27	34	13	19	N. 87 54 W.	.35½	N. 20 E.	.09	
Winter	7	14	7	4	4	3	0	2	6	27	64	71	13	21	17	10	S. 71 6 W.	.51	S. 42 W.	14	
The year	53	61	37	58	36	25	11	16	30	107	180	247	82	106	63	56	S. 79 17 W.	.42½			
Aggregate.																					
The year	4386	4032	12334	7223	8909	2445	4015	2408	6239	8760	22993	14817	14904	6321	7209	3514	S. 67 9 W.	.23½			
142. Louvain.																					
The year	57	23	125	58	58	14	16	15	42	16	51	107	332	51	88	45	N. 67 43 W.	.35½	....	...	366
143. Belgium.[2]																					
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 45 W.	.26			

[1] For the year 1856 only. The resultant of the upper current for five years, 1842 to 1846, was S. 75° W. .31.
[2] Nos. 139 to 142, resultants combined by plotting.

(Nos. 144 to 160.) **Holland.**

Observed at the following places, viz.:—

Amsterdam, during the years 1701 to 1749, and 1766 to 1770, both inclusive, 1855, 1858, 1859 and 1860, by Calkoen, Van Eijk, and others.

Assen, for an aggregate period of 46 months, in the years 1849, 1850, 1851 and 1855, by Dr. Cohen.

Breda, during the years 1838 to 1846 inclusive, by Dr. Wenckebach.

De Helder, from December, 1848, to November, 1851, December, 1854, to November, 1855, and December, 1856, to November, 1857, all inclusive, by C. Van Der Sterr.

Franeker, by Van Swinden, during the years 1771 to 1783 inclusive.

Groningen, by Prof. J. W. Ermerins, for an aggregate period of 46 months, in the years 1848 to 1851 inclusive, and 1855.

Haarlem, from December, 1848, to December, 1850, inclusive.

Hellevoetsluis, by K. C. Bunnik, from December, 1858, to November, 1860, inclusive.

Leeuwarden, by R. D. Smeding, during the years 1843 to 1867 inclusive.

Maastricht, by Prof. D. J. Steijn Parve, from December, 1854, to November, 1857, inclusive.

Nymegen, by P. Leenderts, from December, 1848, to November, 1851, and from December, 1854, to November, 1855, both inclusive.

Utrecht, during the year 1842, and by Dr. F. W. C. Kresk, from December, 1848, to November, 1851, and from December, 1854, to November, 1855, both inclusive.

Vlissingen, by A. Klerck, from December, 1854, to November, 1857, inclusive.

Zwanenberg, from December, 1850, to November, 1851, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.		
144. Vlissingen	Spring	83	23	162	17	84	29	63	16	46	13	101	26	93	10	45	7	...	N. 47° 43′ E.	.10
	Summer	59	18	54	9	53	17	56	4	58	18	201	71	134	15	42	4	...	S. 59 13 W.	.33
	Autumn	31	6	94	5	83	24	93	23	167	27	137	5	57	14	22	14	...	S. 11 29 E.	.32
	Winter	36	8	96	10	60	21	53	10	145	41	161	20	74	19	40	6	...	S. 18 57 W.	.27
	The year	209	55	406	41	280	91	265	53	416	99	600	122	358	58	149	31	...	S. 19 18 W.	.17
145. Hellevoet-sluis.	Spring	27	15	65	11	9	5	14	4	28	20	78	13	23	15	19	17	0	N. 73 14 W.	.13
	Summer	26	7	23	5	10	7	24	5	33	14	94	22	25	10	48	10	0	S. 65 32 W.	.32
	Autumn	17	8	47	19	30	10	32	12	36	28	46	21	13	15	14	12	2	S. 28 34 E.	.15
	Winter	11	9	18	13	15	3	16	11	57	21	72	13	8	9	23	5	0	S. 25 10 W.	.34
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 10 W.	.18
146. Breda.[1]	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 18 22 W.	
	Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 3 W.	
	Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 53 45 W.	
	Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 47 54 W.	
	The year[3]	272	280	525	233	626	117	230	132	309	411	936	525	1021	301	372	214	...	S. 76 4½ W.	.20
147 & 148. Nymegen.	Spring	63	...	177	...	48	...	94	...	80	...	218	...	80	...	142	...	...	S. 82 45 W.	.11
	Summer	65	...	139	...	46	...	60	...	66	...	311	...	91	...	157	...	...	S. 77 4 W.	.26
	Autumn	73	...	179	...	36	...	99	...	98	...	283	...	64	...	107	...	...	S. 49 5 W.	.15
	Winter	24	...	138	...	43	...	129	...	117	...	287	...	52	...	81	...	...	S. 18 28 W.	.27
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 25 W.	.17½
149. Maastricht	Spring	88	14	29	7	31	12	7	3	12	17	49	90	85	23	64	16	...	N. 67 24 W.	.40
	Summer	32	11	12	2	23	2	5	0	19	6	53	137	68	35	64	19	...	N. 89 18 W.	.56
	Autumn	54	14	43	3	12	3	7	0	42	13	77	134	60	26	50	6	...	S. 86 10 W.	.45
	Winter	40	8	37	4	17	6	1	3	24	16	99	156	75	13	36	7	...	S. 77 23 W.	.52
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 29 W.	.47
150. Utrecht.	Spring	105	...	346	...	61	...	159	...	57	...	333	...	119	...	289	...	...	N. 43 20 W.	.14
	Summer	117	...	228	...	37	...	106	...	46	...	363	...	188	...	371	...	...	N. 69 25 W.	.32
	Autumn	77	...	293	...	52	...	185	...	128	...	492	...	111	...	297	...	...	S. 68 8 W.	.18½
	Winter	24	...	249	...	60	...	171	...	121	...	497	...	138	...	176	...	...	S. 43 43 W.	.26
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 43 W.	.18½

[1] In the published report of these observations the direction of the resultant for each month was given, but not its magnitude, and in computing from them the resultants for the seasons, as here given, the magnitudes were assumed to be equal.

[2] Computed from the resultants for the seasons.

[3] For the first six years only.

(Nos. 144 to 160.) **Holland.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
151. Southern Holland.[1]																					
Spring	366	52	779	35	233	46	337	23	223	50	779	129	390	48	559	40	N. 55° 21′ W.	.11	N. 28½° E.	.17	
Summer	299	36	456	16	184	26	330	9	304	38	1151	230	429	60	608	33	S. 73 27 W.	.29	N. 84½ W.	.11	
Autumn	252	28	656	27	213	37	416	35	471	68	1035	160	305	55	490	32	S. 47 31 W.	.18	S. 51½ E.	.05½	
Winter	135	25	538	27	195	30	370	24	464	78	1116	189	347	41	356	18	S. 40 16 W.	.28½	S. 5½ W.	.13	
The year	1331	421	2967	338	1477	256	1692	223	1775	646	5029	1233	2512	505	2394	337	S. 67 12 W.	.19½			
152. Zwanenberg.																					
Spring	19	...	40	...	9	...	30	...	13	...	74	...	26	...	65	...	N. 84 11 W.	.24	N. 12½° E.	.15	
Summer	20	..	29	...	7	...	14	...	12	...	107	...	24	...	63	...	S. 83 19 W.	.39	N. 58½ W.	.13	
Autumn	29	...	29	...	6	...	27	...	18	...	69	...	13	...	82	...	N. 78 55 W.	.28	N. 3 W.	.17	
Winter	4	...	8	...	12	...	59	...	41	...	106	...	18	...	18	...	S. 18 54 W.	.54	S. 13 E.	.40	
The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 2 W.	.29			
153. Amsterdam. 1701 to 1715.																					
Spring	29	...	48	...	50	...	18	...	17	...	39	...	46	...	42	...	N. 10 36 W.	.13	N. 25 E.	.18	1380
Summer	30	...	36	...	32	...	14	...	16	...	62	...	58	...	54	...	N. 71 48 W.	.26	N. 51 W.	.18	1380
Autumn	16	...	22	...	33	...	45	...	27	...	76	...	43	...	41	...	S. 39 30 W.	.16	S. 2 E.	.09	1365
Winter	13	...	19	...	58	...	37	...	30	...	77	...	39	...	27	...	S. 12 56 W.	.22	S. 18 E.	.19	1353
The year	88	...	125	...	173	...	114	...	90	...	254	...	186	...	164	...	S. 67 28 W.	.12	....	...	5478
1701 to 1749, and 1766 to 1770.																					
The year	49	2	60	13	97	12	42	14	48	17	134	24	108	26	62	10	S. 63 23 W.	.16	....	...	19723
1855 and 1858 to 1860.																					
Spring	91	177	178	22	28	13	37	35	72	109	193	57	59	46	60	6	N. 54 22 W.	.09	N. 5 E.	.20	
Summer	109	86	73	31	22	12	67	27	82	98	266	91	66	44	83	17	S. 63 22 W.	.26	N. 76 W.	.15	
Autumn	49	93	115	34	46	36	92	68	189	140	149	47	30	28	42	9	S. 11 2 W.	.24	S. 28 E.	.09	
Winter	60	53	115	34	59	30	70	67	223	115	200	32	42	19	44	10	S. 1 39 W.	.31	S. 26 E.	.18	
The year	309	409	481	121	155	91	266	197	566	462	808	227	197	137	229	42	S. 25 7 W.	.17			
Aggregate.																					
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 40 W.	.15			
154. Haarlem.																					
Spring	20	...	56	...	22	...	61	...	26	...	93	...	24	...	92	...	S. 78 27 W.	.13	N. 34 E.	.09	
Summer	27	...	42	...	9	...	35	...	25	...	142	...	27	...	85	...	S. 74 57 W.	.33	N. 82 W.	.14	
Autumn	17	...	43	...	23	...	69	...	25	...	97	...	28	...	74	...	S. 47 36 W.	.17	S. 80 E.	.06	
Winter	5	...	56	...	28	...	57	...	24	...	134	...	33	...	54	...	S. 37 17 W.	.24½	S. 20 E.	.10	
The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 15 W.	.20½			
155. De Helder.																					
Spring	103	4	577	6	98	0	286	3	70	3	516	4	140	2	380	2	N. 24 8 W.	.07	N. 54 E.	.13	
Summer	118	3	331	1	78	4	101	1	53	1	710	9	240	0	534	0	N. 82 19 W.	.34	N. 73 W.	.21	
Autumn	182	1	404	3	132	4	289	2	182	3	440	3	140	0	361	1	N. 75 23 W.	.04	N. 77 E.	.10	
Winter	57	5	299	3	119	2	306	4	159	8	693	5	135	3	318	2	S. 39 5 W.	.23	S. 1½ W.	.16	
The year	460	13	1611	13	427	10	582	10	464	15	2359	21	655	5	1593	5	S. 84 37 W.	.14			

[1] Nos. 144 to 150 combined. [2] Computed from the resultants for the seasons.

(Nos. 144 to 160.) **Holland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
156. Franeker.	January	210	2054	393	1912	427	2580	574	1850	...	S. 38° 49′ W.	.08			
	February	111	1104	338	1875	538	3854	720	1460	...	S. 37 20 W.	.34			
	March	370	1896	454	1401	314	2150	762	2653	...	N. 60 59 W.	.16			
	April	263	1608	170	967	202	2460	575	3755	...	N. 64 32 W.	.33			
	May	456	1340	232	1125	185	2186	632	3844	...	N. 61 21 W.	.33			
	June	355	1454	125	553	231	2107	1348	3827	...	N. 63 42 W.	.45			
	July	450	583	128	623	285	3427	1120	3384	...	N. 88 46 W.	.50			
	August	223	772	203	603	469	3690	1000	3040	...	S. 82 43 W.	.46½			
	September	201	864	580	1680	564	2797	824	2490	...	S. 62 4 W.	.25			
	October	53	597	235	2140	680	3060	812	2423	...	S. 49 17 W.	.33			
	November	101	969	290	2222	605	2818	643	2352	...	S. 45 55 W.	.15			
	December	150	1081	334	2084	460	3134	545	2215	...	S. 46 27 W.	24			
	Spring	1089	4944	856	3493	701	6796	1969	10252	...	N. 61 57 W.	.27	N. 8° E.	.16	1196
	Summer	1028	2809	456	1779	985	9244	3468	10251	...	N. 83 41 W.	.46	N. 68 W.	.21	1196
	Autumn	355	2420	1105	6042	1849	8675	2279	7265	...	S. 51 58 W.	.27	S. 20 E.	.14	1183
	Winter	471	4239	1065	5871	1425	9568	1839	5525	...	S. 44 36 W.	.20	S. 49 E.	.16	1173
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 29 W.	.27	....	...	4748
157. Leeuwarden.	Spring	9	15	10	7	7	20	9	15	...	N. 63 18 W.	.10	N. 5° E.	.18½	
	Summer	6	10	5	7	9	27	12	16	...	S. 71 10 W.	.29	N. 75 W.	.17	
	Autumn	4	11	11	13	15	20	7	10	...	S. 0 42 W.	.21	S. 54 E.	.12½	
	Winter	3	10	10	12	15	25	8	7	...	S. 10 59 W.	.29½	S. 18½ E.	.16	
	The year	22	46	36	39	46	92	36	48	...	S. 37 47 W.	.17½			
158. Assen.	Spring	62	80	117	42	64	77	162	38	...	S. 86 8 W.	.06	N. 39 E.	.14	368
	Summer	48	60	74	34	53	110	220	46	...	S. 80 28 W.	.30	N. 67½ W.	.16	368
	Autumn	52	48	107	68	95	101	194	25	...	S. 23 53 W.	.19	S. 47 E.	.09	364
	Winter	14	55	77	35	48	134	103	16	...	S. 33 21 W.	.26	S. 1½ E.	.11	360
	The year	176	243	375	179	260	422	634	125	...	S. 52 34 W.	.18	....	...	1460
159. Groningen.	Spring	63	133	25	79	27	142	57	143	...	N. 30 14 W.	.20	N. 24 E.	.18	
	Summer	78	126	19	58	48	282	102	248	...	N. 80 41 W.	.35	N. 73 W.	.18	
	Autumn	56	183	45	94	91	229	50	134	...	S. 59 12 W.	.09	S. 62 E.	.10	
	Winter	18	155	44	116	87	299	69	141	...	S. 43 20 W.	.23	S. 5 E.	.17	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 88 7 W.	.17			
160. Northern Holland.[1]	Spring	...	...	...	...	...	...	...	...	...	N. 59 45 W.	.12½	N. 23 E.	.16	
	Summer	...	...	...	...	...	...	...	...	...	S. 84 45 W.	.32	N. 72 W.	.15½	
	Autumn	...	...	...	...	...	...	...	...	...	S. 49 15 W.	.17	S. 48½ E.	.05	
	Winter	...	...	...	...	...	...	...	...	...	S. 25 0 W.	.26	S. 20 E.	.17	
	The year	...	...	...	...	...	...	...	...	...	S. 66 0 W.	.19			

[1] Nos. 152 to 159, resultant combined by plotting.
[2] Computed from the resultants for the seasons.

(Nos. 161 to 177.) Northwestern Germany.

Computed from observations made at the following places, viz. :—

Bremen, by Dr. Heineken, during the years 1829 to 1858 inclusive—as quoted by Dr. Prestel, from a publication of them, by Dr. Hæpke.

Brocken (mountain), Saxony, by Dr. Nehse, during the years 1836 to 1845 inclusive. (Transactions of the Geographical Society of Berlin.)

Cottbus, Prussia, during the months of October and December, 1855, and January and February, 1856.

Cuxhaven. The date of the observations at this place is not preserved, and it is uncertain whether they embrace a period of twenty years or of only ten years.

Dusseldorf, Prussia, during the year 1783.

Emden, Hanover, during a period of 30 years, by Dr. Prestel—date not preserved.

Gotha, by von Loof, during the year 1846. (Monthly Transactions Geographical Society of Berlin.)

Gottingen, Hanover, during the year 1783.

(Nos. 161 to 177.) **Northwestern Germany.**—*Continued.*

Hamburg, for a period of 30 years, as published by Buck, in his "Climate and Weather of Hamburg," and for the succeeding 18 years, by Dr. V. G. Zimmerman. The dates are not given by Dr. Prestel, from whom these observations are quoted.

Hanau, Hesse-Cassel, during the months of February to June inclusive, 1857.

Luneburg, Hanover. The remarks for Cuxhaven apply also to this place throughout.

Mulhausen, from December, 1854, to November, 1857, inclusive.

Munster, Prussia, published by Dr. Prestel, who does not give the length of the period of observation nor the date.

Norderney, Hanover, from April, 1858, to December, 1862, inclusive.

Paderborn, Prussia, during 21 months, in the years 1854 to 1857 inclusive.

Stone Lighthouse.[1] Nothing but the direction of the resultant is given in the report from this place.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.		
161. Dusseldorf.	The year	97	74	78	25	107	32	83	72	59	45	83	23	152	22	62	58	N. 11° 35′ W.	.03
162. Stone Lighthouse.[1]	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 55 W.	
163. Norderney.	Spring	33	...	48	...	27	...	17	...	13	...	70	...	34	...	58	...	N. 57 13 W.	.20
	Summer	31	...	39	...	30	...	22	...	16	...	67	...	30	...	65	...	N. 62 58 W.	.19
	Winter	12	...	24	...	13	...	45	...	32	...	97	...	39	...	29	...	S. 38 39 W.	.36
	Autumn	19	...	26	...	21	...	47	...	34	...	90	...	34	...	35	...	S. 35 54 W.	.28
	The year	95	...	137	...	91	...	131	...	95	...	324	...	137	...	187	...	S. 66 57 W.	.20
164. Emden.[2]	January	3	...	5	...	26	...	12	...	13	...	25	...	11	...	5	...		
	February	6	...	9	...	18	...	9	...	10	...	19	...	17	...	11	...		
	March	8	...	9	...	16	...	10	...	10	...	19	...	15	...	14	...		
	April	12	...	14	...	20	...	9	...	7	...	16	...	10	...	12	...		
	May	16	...	16	...	17	...	7	...	8	...	15	...	10	...	11	...		
	June	13	...	10	...	9	...	6	...	9	...	21	...	18	...	14	...		
	July	9	...	8	...	6	...	5	...	10	...	24	...	22	...	17	...		
	August	7	...	8	...	10	...	6	...	9	...	25	...	20	...	14	...		
	September	8	...	8	...	17	...	9	...	13	...	20	...	15	...	11	...		
	October	5	...	4	...	16	...	11	...	14	...	24	...	18	...	7	...		
	November	5	...	7	...	21	...	13	...	16	...	21	...	11	...	6	...		
	December	4	...	6	...	19	...	9	...	13	...	27	...	17	...	5	...		
	Spring	3500	...	3876	...	5208	...	2575	...	2490	...	5033	...	3605	...	3721	...	N. 1 28 W.	.03
	Summer	3152	...	2515	...	2389	...	1621	...	2792	...	7030	...	6036	...	4459	...	S. 84 40 W.	.30
	Autumn	1796	...	1945	...	5275	...	3305	...	4321	...	6590	...	4353	...	2411	...	S. 15 2 W.	.22
	Winter	1335	...	2022	...	6258	...	2971	...	3648	...	7078	...	4536	...	2152	...	S. 11 9 W.	.22
	The year	9783	...	10358	...	19130	...	10472	...	13251	...	25721	...	18530	...	12743	...	S. 41 41 W.	.14
165. Munster.	Spring	41	...	30	...	48	...	10	...	22	...	42	...	77	...	31	...	N. 64 9 W.	.19
	Summer	34	...	15	...	21	...	10	...	26	...	48	...	98	...	41	...	N. 86 55 W.	.42
	Autumn	19	...	23	...	55	...	25	...	53	...	49	...	56	...	20	...	S. 15 55 W.	.19
	Winter	20	...	18	...	42	...	21	...	47	...	48	...	81	...	23	...	S. 52 47 W.	.26
	The year	114	...	86	...	166	...	66	...	148	...	187	...	312	...	115	...	S. 74 19 W.	.22
166. Cuxhaven.	The year	31	...	27	...	49	...	36	...	22	...	72	...	56	...	72	...	N. 87 39 W.	.18

[1] Probably the same as Borkum.

[2] Emden. Monsoon influences:—

Spring	N. 36° E.	.16	Autumn	S. 21° E.	.12
Summer	N. 68 W.	.21	Winter	S. 27½ E.	.13

(Nos. 161 to 177.) **Northwestern Germany.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
167. Bremen.	January	2	7	19	15	5	26	20	6					
	February	2	10	14	11	2	26	21	12					
	March	3	11	9	13	3	19	22	17					
	April	4	4	14	13	2	18	15	20					
	May	4	14	13	12	3	14	17	22					
	June	3	7	6	11	3	20	25	24					
	July	3	6	7	7	4	25	27	21					
	August	2	6	7	11	2	27	23	19					
	September	3	7	11	15	3	29	17	15					
	October	2	7	9	16	5	31	22	9					
	November	2	8	15	18	4	28	17	8					
	December	2	6	15	11	3	31	24	8					
	Spring	11	29	36	38	8	51	54	59	S. 85° 4′ W.	.20	N. 26½° E.	.10	2668
	Summer	8	19	20	29	9	72	75	64	S. 83 25 W.	.40	N. 68 W.	.17	2668
	Autumn	9	22	35	49	10	88	56	32	S. 43 0 W.	.27	S. 32 E.	.11	2639
	Winter	6	23	48	34	10	83	65	29	S. 48 12 W.	.25	S. 43½ E.	.08	2617
	The year	34	93	139	150	37	274	250	184	S. 66 24 W.	.26	....	...	10592
168. Hanau.	February	1	4	10	4	2	8	1	0	S. 49 5 E.??	.38			
	Spring	8	21	18	3	7	18	9	6	N. 60 55 E.?	.12			
	June	3	16	2	0	0	8	0	1	N. 30 11 E.??	.39			
169. Hamburg. First 30 years.	The year	381	1130	1339	1134	504	2164	2696	1600	S. 78 39 W.	.25	....	...	10957
169. Hamburg. 48 years.	January	3	5	13	22	5	23	14	15					
	February	3	9	7	16	5	28	16	16					
	March	5	4	9	14	4	19	14	21					
	April	5	16	10	17	3	17	13	20					
	May	3	18	8	16	3	14	14	24					
	June	2	10	4	11	2	19	22	30					
	July	3	6	4	9	4	25	24	25					
	August	3	8	5	13	3	27	21	20					
	September	2	9	6	15	5	24	20	19					
	October	2	8	9	16	7	27	15	16					
	November	3	8	8	19	5	29	17	11					
	December	2	7	10	16	5	30	17	13					
	Spring	13	38	27	67	10	50	41	65	N. 78 23 W.	.12	N. 42 E.	.15	
	Summer	8	24	13	33	9	71	67	75	S. 87 47 W.	.39	N. 67 W.	.18	
	Autumn	7	25	23	50	17	80	52	46	S. 51 31 W.	.27	S. 6½ E.	.08	
	Winter	8	21	36	54	15	81	47	44	S. 39 22 W.	.24	S. 33 E.	.12	
	The year	36	108	99	184	51	282	207	230	S. 68 11 W.	.24			
170. Luneburg.	The year	16	31	35	32	29	63	97	62	S. 82 14 W.	.29			
171. Cottbus.	October	0	0	0	1	8	6	14	0	S. 53 34 W.??	.55½	....	...	29
	Winter	1	2	9	13	8	21	19	12	S. 55 21 W.?	.36	....	...	78
172. Paderborn.	Spring	19	14	29	31	40	28	59	21	S. 40 51 W.	.21	N. 40 E.	.18	241
	Summer	14	11	17	25	33	41	66	33	S. 65 31 W.	.35	N. 25½ W.	.16	240
	Autumn	4	4	18	26	46	21	23	8	S. 3 4 W.	.45	S. 55 E.	.27	150
	Winter	3	0	4	4	31	32	38	8	S. 51 13 W.	.64	S. 67 W.	.28	120
	The year[2]	...	...	...	...	...	...	...	...	S. 40 28 W.	.38	....	...	751
173. Rhenish Prussia.[1]	Spring	...	...	...	...	...	...	...	...	N. 85 15 W.	.13½	N. 35° E.	.11	
	Summer	...	...	...	...	...	...	...	...	S. 86 30 W.	.33	N. 67 W.	.15	
	Autumn	...	...	...	...	...	...	...	...	S. 27 0 W.	.28	S. 21 E.	.18½	
	Winter	...	...	...	...	...	...	...	...	S. 42 45 W.	.31	S. 6 W.	.15½	
	The year	...	...	...	...	...	...	...	...	S. 68 15 W.	.21			

[1] Nos. 161, 163 to 167, and 169, 170 and 172, resultants combined by plotting.
[2] Computed from the resultants for the seasons.

(Nos. 161 to 177.) **Northwestern Germany.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
174. Gottingen																				
The year	45	54	113	25	35	41	96	67	55	109	105	74	29	65	69	69	S. 35° 31′ W.	.09½		
175. Mulhausen.																				
Spring	33	6	19	16	34	10	15	1	14	10	33	6	13	3	30	28	N. 45 13 E.	.23	N. 73° E.	.22
Summer	43	1	12	6	26	6	13	3	18	9	21	1	25	4	35	51	N. 25 48 W.	.34	N. 27½ W.	.22
Autumn	17	3	13	12	51	11	22	1	17	16	28	9	27	12	23	13	S. 28 9 E.	.04	S. 25½ E.	.16
Winter	19	2	11	5	27	2	13	3	23	16	38	13	19	12	39	26	N. 85 47 W.	.23	S. 61½ W.	.21
The year	112	12	55	39	136	27	63	8	72	51	120	29	84	31	127	118	N. 39 27 W.	.13		
176. Brocken.[1]																				
The year	427	277	403	289	618	329	562	249	574	658	1890	786	1780	769	968	330	S. 64 32 W.	.27		
177. Gotha.[1]																				
The year[2]	52	...	83	...	209	...	44	...	60	...	228	...	374	...	45	...	S. 67 44 W.	.26½		

[1] Resultant computed by Dr. Mahlmann.

(Nos. 178 to 180(*b*).) **Southern Denmark.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Apenrade	A. Neuber	9	0	1812 to 1820 inclusive, and ten times a day from June, 1824, to May, 1825, inclusive.
Kiel	....	4	0	December, 1854, to November, 1857, inclusive.
Maibolgaard	Jessen	9	11	1861 to 1870 inclusive.
Naesgaard	Lacoppidan	10	0	1861 to 1870 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
178. Kiel.	Spring	14	3	28	12	36	15	28	3	15	3	27	9	29	8	38	2	...	N. 67° 7′ E.	.04
	Summer	16	3	20	1	18	6	19	1	20	2	57	7	53	5	38	4	...	S. 78 53 W.	.30
	Autumn	10	1	20	1	37	3	31	2	27	7	64	2	30	1	29	1	...	S. 22 31 W.	.23
	Winter	5	1	15	1	29	3	37	6	28	7	52	5	43	2	21	0	...	S. 23 18 W.	.31
	The year	45	8	83	15	120	27	115	12	90	19	200	23	155	16	126	7	...	S. 17 36 W.	.14

(Nos. 178 to 180(*b*).) **Southern Denmark.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
179. Apenrade, 1824–5.																				
January	15	4	13	0	6	8	6	38	37	13	18	25	34	17	42	34				
February	4	6	18	11	13	5	22	6	15	18	34	4	31	14	63	16				
March	13	2	30	8	42	72	16	23	8	1	1	0	35	14	35	10				
April	21	0	7	6	18	31	4	9	11	10	16	23	37	27	43	37				
May	10	9	29	13	19	30	21	12	10	14	11	17	30	35	19	31				
June	9	6	11	3	48	46	17	15	5	0	0	3	46	39	28	18				
July	1	3	5	0	5	6	7	7	6	8	12	30	107	70	26	16				
August	5	0	22	8	24	40	13	11	8	9	21	22	78	16	24	7				
September	1	1	13	4	37	40	16	22	24	22	33	20	21	5	34	3				
October	4	2	3	6	41	16	29	21	39	25	21	22	22	9	23	27				
November	3	9	0	0	0	5	20	19	36	53	40	20	33	32	23	7				
December	5	1	3	0	2	0	7	17	29	45	53	43	34	42	13	16				
Spring	44	11	66	27	79	133	41	44	29	25	28	40	102	76	97	78	N. 9° 46′ W.	.08½	N. 49° E.	.24
Summer	15	9	38	11	77	29	37	33	19	17	33	55	231	125	78	41	N. 84 35 W.	.28½	N. 40 W.	.13
Autumn	8	12	16	10	78	61	65	62	99	100	94	62	76	46	80	37	S. 24 41 W.	.32	S. 16 E.	.23
Winter	24	11	34	11	21	13	35	61	81	76	105	72	99	73	118	66	S. 72 14 W.	.38	S. 76 W.	.17
The year	91	43	154	59	255	299	178	200	228	218	260	229	508	320	373	222	S. 69 14 W.	.21		
179 (*a*). Apenrade, 1812 to 1820.																				
The year	700	...	1183	...	1684	...	847	...	739	...	1368	...	1749	...	1585	...	N. 64 21 W.	.08		
180. Southern Denmark. Nos. 178 and 179 combined.																				
Spring	58	14	94	39	115	148	69	47	44	28	55	49	131	84	135	80	N. 2 21 W.	.06½	N. 49° E.	.23
Summer	31	12	58	12	95	98	56	34	39	19	90	62	284	130	116	45	N. 88 32 W.	.28½	N. 46½ W.	.14
Autumn	18	13	36	11	115	64	96	64	126	107	158	64	106	47	109	38	S. 24 18 W.	.30	S. 17½ E.	.19½
Winter	29	12	49	12	50	16	72	67	109	83	157	77	142	75	139	66	S. 63 32 W.	.34½	S. 68 W.	.14½
The year	136	51	237	74	375	326	293	212	318	237	460	252	663	336	499	229	S. 63 49 W.	.20		

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.		
Maibolgaard. 180(*a*).	January	9	15	10	11	8	26	8	5	...				
	February	10	10	10	8	6	27	10	3	...				
	March	14	24	13	10	5	16	5	5	...				
	April	16	15	10	7	7	16	8	6	...				
	May	15	13	11	12	6	19	9	6	...				
	June	13	7	6	12	6	21	11	9	...				
	July	10	4	5	13	9	22	16	13	...				
	August	12	6	6	14	7	22	12	10	...				
	September	10	5	4	19	10	28	6	4	...				
	October	14	8	15	15	10	21	4	3	...				
	November	16	10	6	10	11	28	4	4	...				
	December	14	11	7	11	9	27	7	5	...				
	Spring	45	52	34	29	18	51	22	17	...	N. 47° 44′ E.	.10	N. 38½ E.	.20
	Summer	35	17	17	39	22	65	39	32	...	S. 62 59 W.	.21½	S. 86½ W.	.14
	Autumn	40	23	25	44	31	77	14	11	...	S. 4 11 W.	.20	S. 17½ E.	.12
	Winter	33	36	27	30	23	80	25	13	...	S. 27 2 W.	.14	S. 21½ W.	.04
	The year	153	128	103	142	94	273	100	73	...	S. 28 23 W.	.10		

(Nos. 178 to 180(*b*).) **Southern Denmark.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
180(*b*). Naesgaard.	January	3	6	8	16	13	26	13	7	...					
	February	2	10	8	9	10	22	15	9	...					
	March	4	13	15	18	12	12	9	10	...					
	April	2	7	8	19	10	14	11	18	...					
	May	3	8	12	19	9	16	14	12	...					
	June	2	5	10	14	10	19	11	17	...					
	July	1	5	7	13	9	23	14	16	...					
	August	2	5	7	16	9	21	13	17	...					
	Sept'mber	3	5	8	17	15	21	9	11	...					
	October	3	7	8	19	17	20	8	10	...					
	November	4	8	5	14	16	25	9	9	...					
	December	4	9	6	14	15	25	11	9	...					
	Spring	9	28	35	56	31	42	34	40	...	S. 2° 52′ E.	.16	N. 57° E.	.14	
	Summer	5	15	24	43	28	63	38	50	...	S. 45 29 W.	.28	N. 68 W.	.10	
	Autumn	10	20	21	50	48	66	26	30	...	S. 15 7 W.	.32	S. 15 E.	.07½	
	Winter	9	25	22	39	38	73	39	25	...	S. 29 15 W.	.31	S. 52½ W.	.06	
	The year	33	88	102	188	145	244	137	145	...	S. 26 4 W.	.26			

(Nos. 181 to 198.) **Northern Germany.**

Observed at the following places, viz. :—

Alstedt, Prussia, during the years 1825, 1826 and 1827.

Aschersleben, Prussia, Dr. Mahlmann, from whom we quote, gives the resultant for this place, but not the data from which it was computed.

Berlin, Prussia, during the years 1769 to 1779, from December, 1854, to November, 1855, from December, 1856, to November, 1857, all inclusive; also during two periods without date, one of 17 years, reported by the British Association for the Advancement of Science, and the other of 25 years.

Dessau, during the month of March, 1855.

Dresden, Saxony, from December, 1854, to November, 1857, inclusive.

Erfurth, Saxe-Weimar, during the years 1781 to 1784 inclusive, and also during a period of five years whose date does not appear.

Frankenheim, Bavaria, during the years 1825 and 1826.

Hof, Bavaria, during the year 1841.

Ilmenau, Saxe-Weimar, during the years 1823 to 1827 inclusive.

Jena, Saxe-Weimar, during the years 1823 to 1827, and 1833 to 1835, both inclusive.

Leipsic, Saxony, from December, 1854, to November, 1857, inclusive (except July, 1856).

Putbus, Prussia, from December, 1854, to November, 1857, inclusive.

Schöndorf, Saxony, during the years 1823 to 1826 inclusive.

Stettin, from 1848 to 1867, twenty years; published annually.

Strehla, Saxony, during 19 months of the years 1854 to 1857 inclusive.

Weimar, Saxe-Weimar, during the years 1823, 1824, 1825 and 1827.

(Nos. 181 to 198.) **Northern Germany.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
181. Ascher-sleben.	The year	...	...	...	...	...	...	...	...	...	S. 50° 52′ W.	.30	....	...	?
182. Alstedt.	Spring	23	55	9	7	19	99	26	38	...	S. 85 46 W.	.25	N. 46° E.	.12	276
	Summer	23	38	4	8	16	106	51	30	...	S. 72 33 W.	.39	S. 67 W.	.04	276
	Autumn	11	39	8	15	14	130	33	23	...	S. 57 0 W.	.42	S. 7 W.	.13	273
	Winter	19	43	6	6	14	101	43	38	...	S. 82 26 W.	.38	N. 38½ W.	.06½	270
	The year	76	175	27	36	63	436	153	129	...	S. 73 1 W.	.35	....	...	1095
183. Erfurth. Date 1781 to 1784.	The year	391	311	652	334	508	732	923	339	6	S. 55 10 W.	.17	....	...	1461
183. Erfurth. Date unk'n.	The year	5	7	21	5	4	17	29	12	...	S. 86 48 W.	.20	....	...	1826
184. Weimar.	Spring	29	45	51	10	11	53	130	39	...	N. 72 39 W.	.30	N. 52 E.	.17	368
	Summer	21	48	26	7	18	69	132	47	...	N. 83 43 W.	.41	N. 18 E.	.07	368
	Autumn	14	20	20	14	20	77	170	29	...	S. 74 55 W.	.56	S. 44 W.	.17	364
	Winter	17	28	31	11	15	91	138	30	...	S. 80 0 W.	.46	S. 26 W.	.06	361
	The year	81	141	128	42	64	290	570	145	...	S. 88 34 W.	.42½	....	...	1461
185. Jena.	Spring	65	92	58	31	47	162	191	94	...	N. 86 42 W.	.31	N. 45 E.	.10	740
	Summer	41	80	44	39	33	218	188	93	...	S. 79 35 W.	.39	South	.02	736
	Autumn	34	52	53	36	57	210	201	85	...	S. 70 18 W.	.41	S. 1 E.	.08	728
	Winter	40	73	27	32	27	206	210	106	...	S. 84 54 W.	.46	N. 79 W.	.07	721
	The year	180	297	182	138	164	796	790	378	...	S. 81 24 W.	.38	....	...	2925
186. Ilmenau.	Spring	23	64	26	22	8	167	64	86	...	S. 85 24 W.	.35	N. 4 W.	.03	460
	Summer	33	71	24	24	20	116	75	97	...	N. 80 29 W.	.30	N. 25 E.	.12	460
	Autumn	28	34	29	23	37	153	100	51	...	S. 67 15 W.	.32	S. 36 E.	.08	455
	Winter	17	28	32	17	25	163	82	87	...	S. 74 32 W.	.45	S. 55 W.	.11	451
	The year	101	197	111	86	90	599	321	321	...	S. 79 57 W.	.37	....	...	1526
187. Saxe Weimar.[1]	Spring	117	201	135	63	66	382	385	219	0	N. 86 6 W.	.31	N. 50 E.	.11	
	Summer	95	199	94	70	71	403	395	237	0	S. 89 47 W.	.36	N. 30½ E.	.06	
	Autumn	76	106	102	73	114	440	471	165	0	S. 72 40 W.	.45½	S. 27 W.	.10	
	Winter	74	129	90	60	67	460	430	223	0	S. 80 47 W.	.45½	S. 68½ W.	.07	
	The year	758	953	1094	605	830	2434	2633	1195	6	S. 76 51 W.	.29½			
188. Franken-heim.	Spring	6	42	16	20	1	14	49	36	...	N. 34 10 W.	.24	....	...	184
	Summer	8	28	18	15	0	18	48	49	...	N. 50 13 W.	.33	....	...	184
	Autumn	2	16	19	47	2	64	62	31	...	S. 55 49 W.	.33	....	...	243
	Winter	9	17	17	40	1	40	52	35	...	S. 75 59 W.	.23	....	...	211
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 23 W.	.25	....	...	730
189. Hof.	Spring	26	36	18	61	35	26	47	37	...	S. 14 47 W.	.07	....	...	92
	Summer	15	13	7	39	21	49	59	53	...	S. 76 8 W.	.35	....	...	92
	Autumn	8	15	21	46	31	48	77	15	...	S. 46 31 W.	.34	....	...	91
	Winter	22	24	13	50	34	56	44	27	...	S. 36 48 W.	.23	....	...	90
	The year	71	88	59	196	111	179	246	135	...	S. 54 41 W.	.23½	....	...	365
190. Northern Bavaria.[2]	Spring	32	78	34	81	36	40	96	73	...	N. 54 15 W.	.08	N. 49½ E.	.17	
	Summer	23	41	25	54	21	67	107	102	...	N. 82 33 W.	.30½	N. 45½ W.	.15	
	Autumn	10	31	40	93	33	112	139	46	...	S. 47 19 W.	.33	S. 16½ W.	.16½	
	Winter	31	41	30	90	35	96	96	62	...	S. 53 37 W.	.22	S. 17½ E.	.06½	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 71 7 W.	.20½			
191. Dessau.	March	1	8	2	2	3	5	4	5	...	N. 41 46 W.??	.10	....	...	30

[1] Nos. 183 to 186 combined. [2] Nos. 188 to 189 combined.

[3] Computed from the resultants for the seasons.

(Nos. 181 to 198.) **Northern Germany.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
192. Leipsic.																						
Spring	15	6	28	7	23	6	30	3	10	15	47	10	24	5	36	6	...	S. 65° 51′ W.	.10	N. 59° E.	.14	271
Summer	16	5	11	6	5	7	17	4	8	5	39	10	49	14	43	1	...	N. 86 53 W.	.38	N. 51 W.	.22	240
Autumn	11	3	30	6	18	5	30	8	20	19	49	9	37	9	15	1	...	S. 30 29 W.	.23	S. 47½ E.	.12½	270
Winter	6	2	24	3	6	4	17	16	28	26	55	6	35	4	33	5	...	S. 46 38 W.	.36	S. 20 W.	.14	270
The year	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	S. 61 16 W.	.24	....	...	1081
193. Strehla.																						
Spring	22	1	8	6	19	3	9	2	8	0	14	12	25	6	10	1	4	N. 63 15 W.	.14	....	...	150
Summer	9	0	2	0	7	0	3	1	5	2	5	8	27	6	13	0	0	N. 82 44 W.	.49	....	...	88
Autumn	9	1	14	1	9	0	14	0	14	7	30	10	41	3	8	1	0	S. 62 32 W.	.37	....	...	162
Winter	14	0	21	6	11	0	10	4	20	10	65	19	56	4	11	2	6	S. 61 57 W.	.42	....	...	259
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 54 W.	.33	....	...	1659
194. Schöndorf.																						
Spring	31	...	52	...	46	...	24	...	10	...	25	...	92	...	88	...	...	N. 40 13 W.	.30	....	...	368
Summer	39	...	33	...	31	...	17	...	6	...	33	...	103	...	106	...	...	N. 54 36 W.	.45	....	...	368
Autumn	19	...	26	...	15	...	20	...	14	...	65	...	118	...	87	...	...	N. 82 4 W.	.49	....	...	364
Winter	24	...	34	...	36	...	19	...	11	...	46	...	93	...	98	...	...	N. 63 32 W.	.38	....	...	361
The year	113	...	145	...	128	...	80	...	41	...	169	...	406	...	397	...	...	N. 62 15 W.	.35	....	...	1461
195. Dresden.																						
Spring	11	...	31	...	22	...	58	...	1	...	39	...	51	...	58	...	...	N. 82 53 W.	.13	N. 36 E.	.08	271
Summer	6	...	27	...	14	...	24	...	11	...	38	...	67	...	83	...	...	N. 74 14 W.	.39	N. 52½ W.	.25	270
Autumn	11	...	23	...	13	...	92	...	4	...	35	...	52	...	38	...	2	S. 13 12 W.	.15	S. 55 E.	.17	270
Winter	3	...	13	...	11	...	92	...	0	...	31	...	74	...	44	...	...	S. 43 44 W.	.23	S. 8 E.	.12	268
The year	31	...	94	...	60	...	266	...	16	...	143	...	244	...	223	...	2	S. 75 7 W.	.18	....	...	1079
196. Saxony.[1]																						
Spring	79	7	119	13	110	9	121	5	29	15	125	22	192	11	192	7	4	N. 67 21 W.	.15½	N. 66° E.	.13½	
Summer	70	5	73	6	57	7	61	5	30	7	115	18	246	20	245	1	0	N. 69 59 W.	.41	N. 40½ W.	.18	
Autumn	50	4	93	7	55	5	156	8	52	26	179	19	248	12	148	2	2	S. 70 31 W.	.27	S. 4½ E.	.10	
Winter	47	2	92	9	64	4	138	20	59	36	197	25	258	8	186	7	6	S. 73 2 W.	.30	S. 11 W.	.09¾	
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	N. 88 49 W.	.26½			
196(*a*). Stettin.																						
Spring	12	...	10	...	19	...	4	...	8	...	7	...	21	...	9	...	...	N. 19 30 W.	.18½	N. 32 E.	.21	
Summer	11	...	9	...	11	...	3	...	8	...	9	...	27	...	13	...	...	N. 66 38 W.	.27½	N. 36 W.	.14	
Autumn	6	...	4	...	18	...	6	...	12	...	13	...	24	...	8	...	...	S. 51 22 W.	.19½	S. 9 E.	.11½	
Winter	6	...	3	...	16	...	4	...	13	...	14	...	27	...	7	...	...	S. 56 20 W.	.25½	S. 17 W.	.14	
The year	35	...	26	...	64	...	17	...	41	...	43	...	99	...	37	...	...	S. 86 23 W.	.17			
197. Berlin. 1769 to 1779, 1855 and 1857, and 17 years without date.																						
Spring	105	...	28	...	124	...	27	...	127	...	35	...	166	...	18	...	2	S. 64 5 W.	.07	N. 63½ E.	.11	
Summer	112	...	17	...	115	...	30	...	96	...	43	...	326	...	32	...	1	S. 89 13 W.	.30	N. 62 W.	.16	
September	107	...	16	...	126	...	44	...	189	...	44	...	194	...	15	...	3	S. 69 51 W.	.20	N. 73½ W.	.03	
Jan.&Feb.	102	...	14	...	136	...	24	...	216	...	59	...	169	...	14	...	4	S. 20 11 W.	.22	S. 33 E.	.15	
The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		S. 63 41 W.	.18			
25 years without date.																						
The year	1068	...	1965	...	3227	...	2658	...	1349	...	6031	...	6149	...	4826	...	...	S. 78 17 W.	.29			
Aggregate.																						
The year	1511	...	2045	...	3749	...	2787	...	1998	..	6218	...	7032	...	4908	...	10	S. 75 34 W.	.26			

[1] Nos. 192 to 195 combined.

[2] Computed from the resultants for the seasons.

(Nos. 181 to 198.) **Northern Germany.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
198. Putbus.	Spring	35	23	66	19	12	19	42	55	...	N. 1° 31′ W.	.19	N. 31½°E.	.24	271
	Summer	19	28	28	22	28	55	52	38	...	S. 72 52 W.	.21	S. 60 W.	.09	270
	Autumn	11	24	38	35	36	48	39	39	...	S. 27 59 W.	.16	S. 21 E.	.13	270
	Winter	30	14	26	34	26	39	65	34	...	S. 76 26 W.	.22	S. 69 W.	.10	268
	The year	95	89	158	110	102	161	198	166	...	S 82 1 W.	.12	....	...	1079

(Nos. 199 to 208.) **Northern Bohemia.**

Observed at the following places, viz. :—

Bodenbach, during the years 1842 and 1848.

Koniggratz, during the years 1848, 1849 and 1859.

Prague, during the years 1783, 1784, 1800 to 1839, 1848 to 1851, and 1855 to 1857, all inclusive.

Purglitz, during the years 1848 to 1851 inclusive (published in the Jahrbucher der K. K. Central Anstalt für Meteorology).

Schoessl, from August, 1838, to December, 1840, inclusive, and during the years 1849, 1850 and 1851.

Schönthal during the year 1841.

Senftenberg, during the years 1845 to 1852 inclusive.

Smecna, during the years 1848, 1849 and 1850.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N.& W.	Calm or variable.			Direction.	Force.	
199. Schönthal.	Spring	3	104	15	4	14	96	16	24	...	N. 47° 10′W.	.05	....	...	92
	Summer	18	38	0	7	10	189	4	10	...	S. 48 27 W.	.52	....	...	92
	Autumn	0	58	15	3	15	180	0	2	...	S. 55 20 W.	.42	....	...	91
	Winter	7	80	8	29	9	122	8	7	...	S. 16 33 W.	.15	....	...	90
	The year	28	280	38	43	48	587	28	43	...	S. 41 8 W.	.29	....	...	365
200. Schoessl[1]	Spring	8	49	18	17	4	75	22	63	8	N. 71 43 W.	.22	....	...	264
	Summer	16	33	9	8	10	87	29	62	22	N. 86 26 W.	.35	....	...	276
	Autumn	9	43	12	20	3	88	22	57	19	N. 89 43 W.	.25	....	...	273
	Winter	14	57	10	15	9	104	11	36	13	S. 74 45 W.	.19	....	...	269
	The year	379	1611	662	367	146	1431	1295	2001	62	N. 46 53 W.	.28	....	...	1964
201. Purglitz.	Spring	23	38	56	53	10	70	169	90	38	N. 84 10 W.	.30	....	...	368
	Summer	17	38	61	42	13	52	199	67	49	N. 85 56 W.	.31	....	...	368
	Autumn	12	39	100	28	6	44	208	61	47	N. 79 10 W.	.25	....	...	364
	Winter	4	28	80	33	4	30	202	55	28	N. 84 12 W.	.30	....	...	361
	The year	56	143	297	156	33	196	778	273	162	N. 83 36 W.	.29	....	...	1461
202. Smecna.	Spring	13	33	15	35	5	68	30	67	9	N. 84 39 W.	.23	....	...	276
	Summer	13	26	2	21	3	95	43	67	8	S. 87 4 W.	.44	....	...	276
	Autumn	11	30	11	25	5	93	40	47	12	S. 75 32 W.	.33½	....	...	273
	Winter	3	34	12	12	2	92	37	58	1	S. 85 40 W.	.39½	....	...	251
	The year[3]	...	...	...	...	...	...	...	...	...	S. 85 16 W.	.35	....	...	1076
203. Bodenbach.	Spring	10	33	5	55	3	23	3	52	...	N. 43 8 E.	.09	....	...	184
	Summer	13	15	9	41	12	25	15	54	...	N. 82 1 W.	.12½	....	...	184
	Autumn	17	23	6	46	18	19	11	42	...	S. 33 26 E.	.01	....	...	182
	Winter	15	24	4	84	6	18	4	26	...	S. 58 27 E.	.48	....	...	181
	The year	55	95	24	226	39	85	33	174	...	S. 68 18 E.	.05	....	...	730
204. North-western Bohemia.[2]	Spring	57	257	109	164	36	332	240	296	55	N. 77 32 W.	.18½	N. 35° E.	.09	
	Summer	77	150	81	119	48	448	290	260	79	S. 81 2 W.	.34	S. 79 W.	.11	
	Autumn	49	193	144	122	47	424	281	209	78	S. 74 35 W.	.24	S. 4½ E.	.03	
	Winter	43	223	114	173	30	366	262	182	42	S. 72 16 W.	.19	S. 65½ E.	.06	
	The year	226	823	448	578	161	1570	1073	947	254	S. 81 51 W.	.23½			

[1] Seasons for the years 1849, 1850 and 1851 only.

[2] Nos. 199 to 203 combined.

[3] Computed from the resultants for the seasons.

(Nos. 199 to 208.) **Northern Bohemia.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
205. Prague. Surface wind, 1783 and 1784.																						
The year	67	23	37	43	23	89	73	66	174	102	250	169	139	139	128	56	48	S. 56° 17′ W.	.37	....	...	731
Surface wind, 1800 to 1839 inclusive.																						
Spring	3174	...	...	...	2393	...	...	...	2590	...	...	...	3844	...	...	...	...	N. 68 4 W.	.13	N. 32° E.	.11	3680
Summer	2988	...	...	...	1640	...	...	...	2416	...	...	...	4955	...	...	...	...	N. 80 12 W.	.26	N. 40 W.	.12	3680
Autumn	2267	...	...	...	2129	...	...	...	3624	...	...	...	3971	...	...	...	...	S. 53 47 W.	.19	S. 22 W.	.07	3640
Winter	2035	...	...	...	1837	...	...	...	4011	...	...	...	4080	...	...	...	...	S. 48 40 W.	.25	S. 4 W.	.12	3609
The year	10464	...	...	...	7999	...	...	...	12641	...	...	...	16850	...	...	...	...	S. 76 9 W.	.19	....	...	14609
Surface wind, 1848 to 1851, and 1855 to 1857, both inclusive.																						
Spring	456	11	346	5	200	7	451	7	280	24	868	15	502	7	806	11	48	N. 87 12 W.	.23	N. 12½ E.	.16	
Summer	274	1	249	1	184	1	400	1	363	21	1057	6	604	7	764	5	6	S. 71 47 W.	.34	N. 58 W.	.07	
Autumn	195	4	325	1	227	4	394	3	451	8	1233	4	361	4	653	3	6	S. 53 13 W.	.31	S. 27½ E.	.04	
Winter	121	2	316	4	196	1	435	7	580	14	1200	5	472	5	497	8	12	S. 42 13 W.	.37	S. 5½ E.	.13	
The year	1046	18	1236	11	807	13	1680	18	1674	67	4358	30	1939	23	2720	27	72	S. 62 41 W.	.30			
Motion of clouds, 1848 to 1851 inclusive.																						
Spring	56	...	19	...	11	...	26	...	73	...	98	...	235	...	72	...	8	S. 82 39 W.	.53	S. 51 E.	.05	
Summer	30	...	18	...	20	...	11	...	31	...	134	...	264	...	50	...	6	S. 81 5 W.	.63	S. 46½ W.	.09	
Autumn	52	...	13	...	28	...	15	...	59	...	65	...	255	...	53	...	3	S. 86 41 W.	.54	N. 74 E.	.02	
Winter	41	...	13	...	18	...	29	...	15	...	49	...	219	...	54	...	1	N. 85 44 W.	.56	North	.08	
The year[1]	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	S. 86 2 W.	.56			
All the foregoing combined.																						
Spring	3686	11	365	5	2604	7	477	7	2943	24	966	15	4581	7	878	11	56	N. 77 4 W.	.17	N. 26½ E.	.11½	4411
Summer	3292	1	267	1	1844	1	411	1	2810	21	1191	6	5823	7	814	5	12	N. 88 22 W.	.30	N. 49½ W.	.11	4344
Autumn	2514	4	338	1	2384	4	409	3	4134	8	1298	4	4587	4	706	3	9	S. 55 59 W.	.22½	S. 25½ E.	.07	4274
Winter	2197	2	329	4	2051	1	464	7	4606	14	1249	5	4771	5	551	8	13	S. 48 50 W.	.28	S. 2½ E.	.12	4239
The year	11756	41	1336	54	8906	102	1834	84	14667	169	4954	199	19901	162	3077	83	138	S. 72 5 W.	.26	....	...	17999
206. Koniggratz.																						
Spring	21	...	37	...	20	...	45	...	7	...	35	...	21	...	89	...	1	N. 33 21 W.	.13½	....	...	276
Summer	13	...	23	...	21	...	29	...	3	...	49	...	36	...	100	...	2	N. 63 26 W.	.34	....	...	276
Autumn	26	...	29	...	12	...	32	...	5	...	41	...	38	...	89	...	2	N. 54 46 W.	.47	....	...	273
Winter	14	...	49	...	27	...	34	...	2	...	33	...	38	...	72	...	2	N. 27 53 W.	.21	....	...	271
The year	74	...	138	...	80	...	140	...	17	...	158	...	133	...	350	...	7	N. 48 22 W.	.26	....	...	1461
207. Senftenberg.																						
Spring	609	...	47	...	561	...	75	...	436	...	35	...	548	...	65	...	4	N. 9 51 E.	.07	....	...	736
Summer	637	...	36	...	483	...	47	...	377	...	36	...	666	...	64	...	5	N. 35 36 W.	.14	....	...	736
Autumn	392	...	25	...	539	...	79	...	562	...	32	...	550	...	82	...	4	S. 5 58 W.	.08	....	...	728
Winter	447	...	36	...	729	...	99	...	583	...	26	...	608	...	70	...	4	S. 44 50 E.	.11	....	...	722
The year	2085	...	144	...	2312	...	300	...	1958	...	129	...	2372	...	281	...	17	N. 23 8 W.	.01½	....	...	2822
208. Northeastern Bohemia.[2]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 45 45 W.	.10½	N. 62½ E.	.08	
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 68 15 W.	.25	N. 54½ W.	.10	
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 15 W.	.19	S. 72 W.	.04½	
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 30 W.	.08	S. 49 E.	.09	
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 30 W.	.15			

[1] Computed from the resultants for the seasons.

[2] Nos. 205 to 207, resultants combined by plotting.

(Nos. 209 to 218.) **Poland, Silesia, and Northeastern Prussia.**

Observed at the following places, viz. :—

Braunsberg, Prussia, during the year 1836.

Breslau, Silesia, from October, 1855, to February, 1856, inclusive.

Cracow, Poland, during the years 1826 to 1851 inclusive, 1855 and 1857.

Dantzic, Prussia, during the years 1813 to 1827.

Konigsberg, Prussia, by Prof. E. Luther, as quoted by Dr. Prestel, who does not give the date nor the length of time over which the observations extend; also during the year 1855.

Pillau, Prussia, during the years 1816 to 1833 inclusive.

Posen, Poland, during the years 1848 to 1865 inclusive, and published in a memoir of Dr. A. Magener on the Climate of Posen.

Sagan, Silesia, during the years 1781, 1782 and 1783, and also during a period of five years, whose date is not preserved.

Warsaw, during the months of November, 1855, February, November and December, 1856, and January, 1857.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		No. of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
209. Sagan.																						
The year	142	21	385	47	314	38	271	49	436	117	707	49	322	69	330	23	...	S. 29° 56′ W.	20			
210. Posen.																						
January	4	...	8	...	16	...	14	...	14	...	18	...	17	...	8							
February	6	...	8	...	13	...	9	...	10	...	19	...	22	...	12							
March	6	...	7	...	16	...	10	...	11	...	15	...	20	...	12							
April	12	...	12	...	12	...	11	...	10	...	13	...	17	...	13							
May	13	...	16	...	14	...	11	...	8	...	11	...	13	...	14							
June	12	...	12	...	10	...	9	...	9	...	13	...	17	...	17							
July	11	...	8	...	7	...	8	...	9	...	14	...	24	...	19							
August	11	...	7	...	5	...	9	...	10	...	17	...	22	...	15							
September	12	...	9	..	13	...	11	...	11	...	16	...	16	...	12							
October	6	...	10	...	16	...	14	...	14	...	21	...	14	...	7							
November	7	...	9	...	16	...	17	...	13	...	17	...	15	...	8							
December	5	...	8	...	12	...	12	...	15	...	22	...	18	...	8							
Spring	31	...	35	...	42	. .	32	...	29	...	39	...	50	...	39	...	...	N. 78 38 W.	.04½	N. 40° E.	.10	1472
Summer	34	...	27	...	22	...	26	...	28	...	44	...	63	...	51	...	...	N. 80 38 W.	.24	N. 50 W.	.17	1472
Autumn	25	...	28	...	45	...	42	...	38	...	54	...	45	...	27	...	...	S. 10 29 W.	.14	S. 49½ E.	.11	1456
Winter	15	...	24	...	41	...	35	...	39	...	59	...	57	...	28	...	...	S. 33 40 W.	.22	S. 8½ W.	.11½	1444
The year	105	...	114	...	150	...	135	...	134	...	196	...	215	...	145	...	...	S. 58 24 W.	.13	....	...	5844
211. Breslau.																						
Autumn	9	...	4	...	9	...	21	...	5	...	5	...	4	...	3	...	...	S. 60 59 E.?	.33	....	...	61
Winter	3	...	1	...	1	...	17	...	12	...	1	...	3	...	7	...	...	S. 17 31 E.?	.37	....	...	90
212. Dantzic.[1]																						
Spring	493	152	116	58	234	74	132	95	474	107	165	98	496	241	143	48	...	N. 85 10 W.	.15	N. 59½ W.	.21½	1196
Summer	590	158	147	83	156	58	56	29	308	113	140	72	702	278	155	32	...	N. 58 8 W.	.30	N. 48½ W.	.39	1196
Autumn	195	30	84	33	175	98	137	85	704	205	273	97	565	225	153	46	...	S. 43 14 W.	.35	S. 52 E.	.27	1183
Winter	147	38	34	16	104	62	175	79	798	157	183	95	636	255	115	48	...	S. 44 33 W.	.42	S. 52½ E.	.33	1173
The year	1425	378	381	190	669	292	500	288	2284	582	761	362	2399	999	566	174	...	S. 67 59 W.	.25	....	...	4748

[1] The resultants for the several months at Dantzic, according to Prof. Dove, are as follows :—

	January.	February.	March.	April.	May.	June.
Dantzic	S. 50½° W.	S. 60° W.	S. 84½° W.	N. 69° W.	N. 38½° W.	N. 41½° W.
	July.	**August.**	**September.**	**October.**	**November.**	**December.**
Dantzic	N. 72½° W.	S. 83° W.	S. 72° W.	S. 37° W.	S. 55° W.	S. 48° W.

(Nos. 209 to 218.) **Poland, Silesia and Northeastern Prussia.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
213. Braunsberg.																					
The year	84	...	14	...	63	...	83	...	165	...	229	...	228	...	133	...	...	S. 60° 42′ W.	.41		
214. Cracow.[1]																					
Spring	1498	4	94	10	1732	3	50	0	1025	0	75	3	2524	3	102	4	9	N. 56 37 W.	.14	N. 62½° E.	.04½
Summer	1453	9	74	2	1301	0	26	0	959	0	84	8	3072	4	135	7	11	N. 72 38 W.	.27	N. 75 W.	.10
Autumn	1266	3	83	6	1805	2	56	0	936	1	79	0	2763	0	62	1	20	N. 70 16 W.	.14	S. 72 E.	.03
Winter[2]	383	2	78	8	682	1	26	0	377	0	125	4	994	2	78	5	4	N. 87 18 W.	.14	S. 23 E.	.05
The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 72 1 W.	.17		
215. Pilau.																					
The year	1073	...	825	...	1349	...	1581	...	1210	...	2525	...	1892	...	2027	...	668	S. 63 34 W.	.17½		

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
216. Konigsberg.	January	3	12	16	13	7	19	21	9	...					
	February	4	10	16	11	6	22	22	9	...					
	March	6	13	15	11	7	17	20	10	...					
	April	11	10	15	14	4	14	20	12	...					
	May	14	13	14	10	4	13	19	13	...					
	June	10	11	14	9	5	14	26	11	...					
	July	9	9	11	7	5	15	29	15	...					
	August	6	10	12	9	5	18	29	11	...					
	September	8	10	15	10	4	19	24	10	...					
	October	3	8	19	15	9	23	18	5	...					
	November	2	10	19	18	7	20	17	7	...					
	December	3	7	15	11	7	24	24	9	...					
	Spring	43	43	68	43	18	50	75	39	...	N. 27° 54′ W.	.05	N. 33° E.	.12½	
	Summer	31	30	71	26	17	51	124	40	...	N. 83 22 W.	.20	N. 51½ E.	.14	
	Autumn	13	33	69	49	24	82	61	23	...	S. 7 22 W.	.18	S. 30 E.	.13½	
	Winter	16	36	71	37	31	90	80	37	...	S. 41 35 W.	.18	S. 20½ W.	.08	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 55 55 W.	.11			
217. Warsaw.	Autumn	1	1	3	18	8	12	11	5	...	S. 15 22 W.?	.42	....	...	60
	Winter	8	5	0	17	9	15	25	9	...	S. 62 32 W.	.34	....	...	91
218. North-eastern Prussia.[4]	Spring	...	...	...	...	...	...	...	...	...	N. 72 15 W.	.09	N. 37 E.	.13½	
	Summer	...	...	...	...	...	...	...	...	...	N. 68 15 W.	.24	N. 19½ W.	.18	
	Autumn	...	...	...	...	...	...	...	...	...	S. 31 30 W.	.25½	S. 12½ E.	.14	
	Winter	...	...	...	...	...	...	...	...	...	S. 43 45 W.	.30	S. 17½ W.	.15	
	The year	...	...	...	...	...	...	...	...	...	S. 62 30 W.	.23½			

[1] The resultants for the several months at Cracow, according to Dr. Mahlmann, are as follows:—

	January.		February.		March.		April.		May.		June.	
Cracow	S. 86° W.	12	N. 5° E.	7½	N. 66° W.	23½	N. 20° W.	15½	N. 26° W.	20	N. 54° W.	26
	July.		**August.**		**September.**		**October.**		**November.**		**December.**	
Cracow	N. 65° W.	35½	N. 62° W.	29	N. 22° W.	12½	N. 37° W.	18	N. 52° W.	16½	N. 85° W.	18

[2] Winters of the years 1837 to 1847 omitted. [3] Computed from the resultants for the seasons.
[4] Nos. 212, 213, 215 and 216, resultant combined by plotting.

(Nos. 218(*a*) to 240(*a*).) **Russia.**

Observed at the following places, viz.:—

Brestlitowsk, from December, 1852, to April, 1863, inclusive.

District of Elnia, by Marks, for a period of eight years (1845 to 1853), and published weekly in the Journal of Trade.

Gorki, by Schmidt, during the years 1844 to 1854 inclusive.

Kalouga, from December, 1852, to November, 1853, inclusive, and 1857.

Kiev, by Kobisov, at the Botanical School, during the years 1854 and 1855.

Koursk, during the years 1840 to 1846 inclusive—resultants computed by Spasski.

Krutez, by A. Nikolaiki, during the years 1846 to 1850 inclusive.

Minsk, in the year 1850, from June to October inclusive.

Orel, by Prof. Basilius Petrov, during the years 1838 to 1845 inclusive.

Orenburg, during the years 1848 to 1867 inclusive, published in the Imperial Russian Geographical Society's publications, calculation made by Ovodof.

Pensa, during the year 1857; also from January, 1862, to November, 1870, inclusive, with the omission of the seven months, April to October, 1867, by Dr. Holmskij.

Samara, during the years 1859 to 1869 inclusive, by Dr. Ukke.

Samarskaja Utschebnaja Ferma (agricultural school of Samara), during the years 1848 to 1854 inclusive.

Saratov, during the year 1836, and ten years whose date is not preserved.

Smolensk, from June to November inclusive, in the year 1850.

Tambof, by Dr. Reng, during the years 1825 to 1836 inclusive.

Tula, by Dr. Moritz, during the years 1846 and 1847.

Ufa, by Bosse, during the years 1835 to 1849 inclusive.

Uralsk, during the year 1853, and by H. Kahnikoff, from September 13, 1839, to November 12, 1841.

Voronesch, from January, 1852, to April, 1854, inclusive, and published in the work of Taratschkov, on the Climate of Voronesch.

Wilna, from April, 1770, to March, 1771, inclusive.

Woltschansk, from January to May, and from September to November, both inclusive, in the year 1853, 1857 entire.

Place of observation.	Time of the year.	Relative Prevalence and force of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
218(*a*). Brestlitowsk.	Spring	36	21	18	9	13	12	17	30	27	N. 12° 17 W.?	.19			61
	Winter	13	21	55	45	42	37	37	13	7	S. 25 0 E.?	.25½			90
219. Wilna.	The year	271	161	291	671	291	541	911	461	...	S. 59 26 W.	.24			365
220. Minsk.	Summer	17	21	32	7	8	79	47	6	59	S. 59 9 W.?	.24			87
	Autumn	0	30	34	32	23	126	33	8	78	S. 12 39 E.?	.34			73
221. Kiev.	The year	601	2230	473	2036	369	1908	847	1534	...	N. 29 32 E.[2]	.04			731
222. Gorki.[1]	January	634	1441	1807	1021	968	1215	1516	1398	...	N. 64 34 E.	.02	N. 72¾° E.	.13	341
	February	568	900	847	1801	1157	1886	1597	1243	...	S. 32 9 W.	.20	S. ½ W.	.14	311
	March	753	723	1281	1408	1095	1046	1720	1974	...	S. 80 48 W.	.11	N. 8¾ W.	.01	341
	April	1020	1333	848	1475	657	1232	1374	2060	...	N. 45 43 W.	.12	N 9¾ E.	.11½	330
	May	528	850	1584	1877	635	1261	1134	2131	...	S. 4 6 W.	.02	N. 5½ E.	.10½	341
	June	644	811	1100	756	556	2033	1933	2167	...	N. 85 17 W.	.27	N. 72 W.	.17	330
	July	914	978	624	1419	828	1742	1032	2462	...	N. 80 27 W.	.17	N. 44¾ W.	.08½	341
	August	441	936	1032	1183	1312	1828	1419	1849	...	S. 55 9 W.	.18	S. 28 W.	.08	341
	September	678	1511	978	811	733	1811	1933	1545	...	N. 81 35 W.	.17	N. 47½ W.	.08	330
	October	782	890	1251	1388	968	1711	1104	1906	...	S. 63 16 W.	.09	S. 68¼ E.	.03	341
	November	475	798	1535	1465	1303	2020	1545	859	...	S. 11 49 W.	.21½	S. 20 E.	.19	330
	December	958	1253	899	1104	1016	1320	1818	1632	...	N. 78 47 W.	.13½	N. 23 W.	.06	341
	Spring	767	969	1238	1587	796	1180	1409	2055	...	N. 76 51 W.	.06½	N. 43 E.	.06½	1012
	Summer	666	908	919	1119	899	1868	1461	2159	...	S. 84 48 W.	.19½	N. 82 W.	.08½	1012
	Autumn	645	1066	1255	1221	1001	1847	1527	1437	...	N. 52 14 W.	.12	S. 16 E.	.04½	1001
	Winter	720	1198	1184	1309	1047	1474	1644	1424	...	S. 59 4 W.	.08½	S. 68 E.	.03½	993
	The year	700	1035	1149	1309	936	1592	1510	1769	...	S. 74 11 W.	.11	....	...	4018

[1] Transcribed from Wesselowski, except the last four columns.

[2] The separate resultants for the two years are greatly at variance, the former being N. 58° 57′ W. .07, and the latter S. 81° 50′ E. .10.

(Nos. 218(*a*) to 240(*a*).) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
223. Smolensk.	Summer	8	0	42	27	41	11	59	3	84	S. 7° 42′ W.	.21	....	...	92
	Autumn	16	7	55	20	64	11	46	8	46	S. 13 53 E.	.22	....	...	91
224. District of Elnia.[1]	The year	950	919	974	1185	1588	1856	1505	1023	...	S. 37 21 W.	.18	....	...	2924
225. Kalouga.	Spring	26	72	64	77	59	83	57	60	54	S. 12 1 E.	.10	S. 82° E.	.11	
	Summer	43	55	35	41	50	69	91	75	93	N. 85 28 W.	.16½	N. 38½ W.	.12	
	Autumn	44	28	32	61	43	71	87	53	127	S. 66 16 W.	.16	N. 71 W.	.06	
	Winter	25	22	65	74	84	73	76	64	57	S. 21 23 W.	.20	S. 10 E.	.10½	
	The year	138	177	196	253	236	296	311	252	331	S. 47 20 W.	.12			
226. Orel.[2]	January	33	92	55	241	56	108	25	87	11	S. 41 42 E.	.27			
	February	24	82	91	209	55	103	24	85	5	S. 46 24 E.	.28			
	March	45	113	46	199	35	121	47	131	7	S. 43 28 E.	.08			
	April	60	87	25	150	25	123	70	168	7	N. 76 39 W.	.11			
	May	98	152	64	143	24	102	22	128	11	N. 38 13 E.	.16½			
	June	38	70	52	115	37	207	53	151	7	S. 63 57 W.	.19			
	July	21	79	30	153	49	184	46	108	22	S. 23 33 W.	.21			
	August	40	123	35	98	23	156	25	143	46	N. 70 22 W.	.08			
	September	58	158	44	167	24	105	35	107	22	N. 71 44 E.	.13			
	October	47	71	53	213	59	140	34	75	18	S. 16 32 E.	.23			
	November	45	84	64	177	67	155	28	77	13	S. 25 9 E.	.21			
	December	36	107	71	196	38	131	39	121	5	S. 43 30 E.	.13			
	Spring	203	352	135	492	84	346	139	427	25	N. 25 54 E.	.03	N. 14 W.	.11½	
	Summer	99	272	117	366	109	547	124	402	75	S. 52 58 W.	.14	West	.15	
	Autumn	150	313	161	557	150	400	97	259	53	S. 39 47 E.	.16	S. 59½ W.	07	
	Winter	93	281	217	646	149	342	88	293	21	S. 43 0 E.	.23	S. 55 E.	.14	
	The year	545	1218	630	2061	492	1635	448	1381	174	S. 26 11 E.	.09			
227. Koursk.[3]	Spring	100	124	57	185	68	188	92	185	...	S. 81 0 W.	.08	N. 32 E.	.04½	644
	Summer	116	108	51	152	42	158	137	236	...	N. 62 0 W.	.20½	N. 29½ W.	.16	644
	Autumn	72	100	49	248	75	182	112	161	...	S. 26 0 W.	.13½	S. 30 E.	.08	637
	Winter	55	85	34	272	78	194	136	145	...	S. 28 0 W.	.18	S. 8 E.	.11	632
	The year	86	104	48	214	66	180	119	182	...	S. 61 0 W.	.11½	....	...	2557
228. Wolt-schansk.	Spring	30	83	149	82	61	75	35	37	...	S. 69 20 E.	.29	S. 73 E.	.19	
	Summer	34	24	31	19	35	34	72	36	...	N. 86 14 W.	.21	N. 78½ W.	.30	
	Autumn	45	59	157	48	35	62	81	59	...	N. 76 40 E.	.12½	N. 26 E.	.09	
	Winter	9	51	118	52	50	55	61	36	...	S. 49 54 E.	.20	S. 41].	.11	
	The year[5]	...	...	...	...	...	...	...	...	...	S. 60 59 E.	.10			
229. Tula.[1]	The year	438	507	1219	1425	795	1329	2616	1671	...	S. 70 29 W.	.23	....	...	730
230. Voronesch[1]	The year	695	1006	1349	813	1097	2016	1412	1613	...	S. 67 34 W.	.14½	....	...	851
230(*a*). Tambof.[1]	The year	1307	693	800	1387	1253	1467	1867	1226	...	S. 68 8 W.	.16	....	...	4383
231. South Central Russia, Nos. 222 to 225 & 229 combined.[4]	Spring	282	395	477	606	324	456	526	745	54	N. 86 3 W.	.05	N. 48 E.	.07	
	Summer	273	358	383	441	390	703	637	798	177	S. 81 47 W.	.18	N. 74 W.	.08	
	Autumn	275	390	505	488	440	798	642	540	173	S. 47 59 W.	.14½	S. 3½ W.	.05	
	Winter	265	421	459	510	433	564	624	538	57	S. 48 55 W.	.10	S. 54½ E.	.03	
	The year	...	...	...	...	...	...	...	...	...	S. 57 30 W.	.15½			

[1] Transcribed from Wesselowski.

[2] The ratios of the resultants are those of Wesselowski, modified by making allowance for calms.

[3] If to the observations here given we add a series taken from June to November, inclusive, in the year 1850, the resultant for summer becomes N. 78° 47′ W. .17, for autumn S. 23° 30′ W. .15, and for the year S. 60°48′W. .11.

[4] Using only one-third of the numbers for Gorki (No. 222) in order to give them only their proper weight; annual resultant combined by plotting.

[5] Computed from the resultants for the seasons.

(Nos. 218(*a*) to 240(*a*).) **Russia.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
232. Krutez.[1]	January	47	1090	237	6469	308	616	355	878	...	S. 47° 4′ E.	.56½	S. 71½° E.	.39½	155
	February	275	633	82	1538	1978	3542	439	1813	...	S. 35 37 W.	.41	S. 74½ W.	.28½	141
	March	183	938	252	3135	984	2815	549	1145	...	S. 3 33 W.	.35	S. 36½ W.	10½	155
	April	162	405	1243	5243	892	757	621	676	...	S. 40 34 E.	.55	S. 63¼ E.	.35½	150
	May	430	779	1129	1533	1989	1774	1075	1290	...	S. 11 1 W.	.25	N. 84 W.	.08½	155
	June	136	1831	1322	1119	136	1220	2068	2169	...	N. 42 11 W.	.16	N. 21¼ W.	.40	150
	July	327	873	2073	1200	764	800	2509	1454	...	S. 69 42 W.	·6	N. 22¼ W.	.25	155
	August	267	633	2600	2167	1333	1233	1100	667	...	S. 40 2 E.	.33	N. 89¼ E.	.17	155
	September	95	1019	1624	2771	446	1274	1433	1337	...	S. 33 32 E.	.18½	N. 31 E.	.12	150
	October	119	475	1306	2878	386	2285	1543	1009	...	S. 3 56 W.	.28½	S. 64 W.	.06	155
	November	58	351	205	3216	1257	3392	497	1023	...	S. 10 19 W.	.49½	S. 28½ W.	.26½	150
	December	50	1375	425	2250	1050	2750	425	1675	...	S. 13 19 W.	.24	N. 77 W.	.09½	155
	Spring	258	707	875	3304	1288	1782	748	1037	...	S. 15 56 E.	.35	S. 35½ E.	.09½	460
	Summer	243	1112	1998	1495	744	1084	1892	1430	...	S. 18 0 E.	.05½	N. 6 W.	.20½	460
	Autumn	91	615	1045	2955	696	2317	1158	1123	...	S. 0 24 W.	.31	S. 36½ W.	.07	455
	Winter	124	1033	248	3419	1112	2205	406	1455	...	S. 7 6 E.	.32	S. 1½ E.	.06	451
	The year	179	867	1042	2793	960	1847	1051	1261	...	S. 8 28 E.	.26	....	...	1826
233. Pensa, 1857.	Spring	27	13	17	53	52	47	23	44	...	S. 7 10 W.	.26	N. 87 E.	.16½	92
	Summer	27	11	8	29	90	42	52	17	...	S. 31 38 W.	.40	S. 9½ W.	.07½	92
	Autumn	40	4	2	32	78	37	62	24	...	S. 49 13 W.	.37	N. 73 W.	.08½	91
	Winter	17	7	9	60	34	66	46	31	...	S. 36 47 W.	.37	S. 41 W.	.04	90
	The year	111	35	36	174	254	192	183	116	...	S. 36 20 W.	.33	....	...	365
233(*a*). Pensa, 1862–70.	See Addendum at the end of this Zone.														
234. Saratov.	Wesselowski gives the directions of the resultants for the seasons and year, for a period of ten years (without date), as follows, viz.: Spring N. 0° 42′ W., Summer N. 33 °45′ W., Autumn N. 37° 57′ W., Winter N. 49° 34′ W., the year N. 36° 38′ W. Chevalier Kahnikoff, in a letter to the author, states that the direction of the resultant for the year 1836 was S. 22° 10′ W., and the ratio of the resultant to the sum of the winds .054. If we combine the two, and assume that the ratio of the resultant was the same in the former as in the latter, the direction for the year is N. 41° 23′ W.														
235. Samarskaja Ferma.[1] (Agricultural School of Samara.)	January	1284	1790	1953	796	1284	1320	506	1067	...	N. 71° 53′ E.	.17	N. 77° E.	.18	217
	February	1281	860	1759	1300	1243	2199	287	1071	...	S. 33 15 E.	.13	S. 35¼ E.	.15	198
	March	821	1521	1504	1624	889	2256	513	872	...	S. 42 7 E.	.15	S. 43½ E.	.17	217
	April	943	1263	2028	1174	836	1708	676	1370	...	S. 85 44 E.	.09	S. 80 E.	.10½	210
	May	639	1733	1259	1168	821	1496	985	1898	...	N. 8 1 W.	.05	N. 13 E.	.04	217
	June	837	1490	1163	510	816	1470	1347	2367	...	N. 47 46 W.	.20	N. 47 W.	.18	210
	July	351	1901	909	413	723	1550	868	3285	...	N. 40 3 W.	24½	N. 39 W.	.22½	217
	August	1075	1481	1724	913	730	791	750	2536	...	N. 9 17 E.	.20	N. 24½ E.	.19½	217
	September	1073	1511	1073	815	1014	1630	1213	1670	...	N. 55 3 W.	.10	N. 55¾ W.	.08	210
	October	948	725	1115	1022	1208	1747	800	2435	...	N. 89 26 W.	.14	S. 85 W.	.12½	217
	November	450	994	1107	2139	1295	2120	713	1182	...	S. 6 50 E.	.23	S. 10½ E.	.24½	210
	December	1066	1140	643	1195	1011	2371	993	1581	...	S. 70 6 W.	.16	S. 63½ W.	.15	217
	Spring	801	1506	1597	1322	849	1820	725	1380	...	S. 69 37 E.	.06½	S. 64½ E.	.08½	644
	Summer	754	1624	1265	612	756	1270	988	2729	...	N. 28 59 W.	.20	N. 26¼ W.	.18	644
	Autumn	824	1077	1098	1325	1172	1832	909	1762	...	S. 48 31 W.	.08½	S. 34¼ W.	.08	637
	Winter	1210	1263	1452	1097	1179	1963	595	1240	...	S. 36 38 E.	.04½	S. 12¾ W.	.05	632
	The year	897	1367	1353	1089	989	1721	804	1778	...	N. 51 48 W.	.02	....	...	2557
235½. Samara.	Spring	7.3	15.7	15.6	3.9	12.6	16.5	14.1	1.1	5.2	S. 20 23 E.	.09	S. 64½ E.	.11½	
	Summer	15.3	17.4	7.4	1.5	4.6	9.9	27.5	2.3	6.1	N. 42 50 W.	.24½	N. 23 W.	.23½	
	Autumn	10.5	14.3	7.5	3.0	9.7	21.4	16.1	2.9	5.6	S. 72 26 W.	.15½	S. 82 W.	.08	
	Winter	6.0	12.8	12.0	6.1	13.3	22.1	9.0	1.4	7.6	S. 0 51 W.	.19	S. 25 E.	.17	
	The year	39.1	60.2	42.5	14.5	40.2	69.9	66.7	7.7	24.5	S. 64 9 W.	.08			
236. Uralsk.[2]	Spring	60	4	20	0	16	22	12	2	48	N. 10 39 W.	.18	North	.16	
	Summer	40	14	6	4	6	16	24	14	60	N. 33 44 W.	.27	N. 30° W.	.23	
	Autumn	16	20	12	2	6	24	30	18	54	N. 60 5 W.	.20	N. 61 W.	.16	
	Winter	13	2	12	22	12	10	13	4	92	S. 19 15 E.	.10	S. 29½ E.	.13½	
	The year	129	40	50	28	40	72	79	38	254	N. 51 54 W.	.04			

[1] Transcribed from Wesselowski, except the last four columns.

[2] Obtained by combining the resultant of the observations here given with that computed by Kahnikoff from observations made from September 13, 1839, to November 12, 1841, viz.: S. 10° W. .017.

(Nos. 218(*a*) to 240(*a*).) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
237, 238 and 239. Orenburg.[1]	January	101	205	217	66	96	164	77	39	33	N. 85° 0′ E.	.19			
	February	110	171	198	83	112	164	88	43	30	S. 80 0 E.	.14½			
	March	127	173	230	108	98	124	66	43	20	N. 84 0 E.	.24½			
	April	113	170	222	109	84	119	93	70	20	N. 79 0 E.	.19½			
	May	129	152	161	74	93	131	131	105	24	N. 17 0 E.	.07½			
	June	193	160	133	41	65	110	152	125	19	N. 10 0 W.	.22½			
	July	203	171	125	42	66	97	154	113	29	N. 6 0 W.	.24			
	August	173	135	120	42	78	116	172	122	36	N. 29 0 W.	.19			
	September	141	152	140	63	88	136	142	109	28	N. 12 0 W.	.10			
	October	109	104	117	68	109	205	155	104	29	S. 71 0 W.	.14			
	November	115	129	166	74	113	163	175	68	37	S. 24 0 E.	.03			
	December	112	141	165	80	118	196	103	45	39	S. 34 0 E.	.08½			
	Spring	369	495	613	291	275	374	290	218	64	N. 74 27 E.	.16	S. 84° E.	.12	
	Summer	569	466	378	125	209	323	478	360	84	N. 14 35 W.	.21½	N. 32½ W.	.17½	
	Autumn	365	385	423	205	310	504	472	281	94	N. 82 30 W.	.06	S. 64 W.	.11½	
	Winter	323	517	580	229	326	524	268	127	102	S. 78 4 E.	.12½	S. 44 E.	.11½	
	The year	1626	1863	1994	850	1120	1725	1508	986	344	N. 34 37 E.	.07			
240. Ufa.[2]	January	1450	0	204	584	7303	152	229	76	...	S. 2 3 E.	.63	S. 11 E.	.25½	465
	February	1311	85	370	627	6923	114	427	142	...	S. 2 33 E.	.60	S. 14 E.	.23	424
	March	1843	172	246	712	6535	270	147	74	...	S. 5 17 E.	.52½	S. 28 E.	.16½	465
	April	2725	69	208	485	4642	462	1016	393	...	S. 24 19 W.	.25	N. 27½ W.	.16½	450
	May	2120	154	239	376	4923	547	1368	273	...	S. 22 56 W.	.34	N. 58¾ W.	.12	465
	June	1807	36	197	268	6029	393	841	429	...	S. 13 4 W.	.45	S. 52½ W.	.09½	450
	July	3474	248	546	322	3424	521	1042	422	...	S. 77 44 W.	.03½	N. 1¼ W.	.37	465
	August	2910	0	802	277	4411	300	993	300	...	S. 13 43 W.	.17½	N. 4 W.	.21	465
	September	2765	147	647	118	4912	118	882	412	...	S. 12 27 W.	.20	N. 6½ W.	.18½	450
	October	2194	188	501	282	6050	188	470	125	...	S. 2 3 E.	.40	S. 61½ E.	.04½	465
	November	1481	74	173	543	7111	173	395	49	...	S. 0 33 E.	.60½	S. 8 E.	.23	450
	December	1982	239	392	610	6122	261	392	0	...	S. 5 11 E.	.46	S. 40½ E.	.10½	465
	Spring	2229	132	231	524	5367	426	844	247	...	S. 10 0 W.	.36	N. 56 W.	.04	1380
	Summer	2730	95	517	289	4621	405	959	384	...	S. 19 35 W.	.22	N. 16 W.	.18	1380
	Autumn	2147	136	440	314	6024	160	582	195	...	S. 1 4 W.	.40	S. 40¼ E.	.03	1365
	Winter	1581	108	322	607	6783	176	349	73	...	S. 2 5 E.	.56½	S. 14 E.	.19	1354
	The year[3]	2172	118	377	434	5699	292	684	225	...	S. 4 15 W.	.38	....	...	5479
240(*a*). Omsk.	See Addendum at the end of this Zone.														

[1] Nos. 237 to 238, resultant combined by plotting.
[2] Transcribed from Wesselowski, except the last four columns.
[3] The annual resultant for the years preceding 1840 is, according to Kahnikoff, N. 15° 25′ W. .107, and if we combine the two we obtain for an aggregate resultant N. 10° 32′ E. .085.

(Nos. 241 to 248.) **Southern Siberia.**

Observed at the following places, viz.:—

Akmollinsk, from December, 1870, to November, 1871, inclusive, by Captain Lasarew.

Barnaule, from December, 1849, to December 1853, inclusive, and during the years 1838 and 1857.

Douai Lighthouse (Dui) Saghalien Island, during the year 1866, by Gousseff; also from October, 1863, to December, 1865, inclusive; observer's name not known.

Irkutsk, during the years 1830 to 1844 inclusive.

Mines of Nertschinsk, 300 kilometres Southeast of the city of Nertschinsk, hourly from December, 1849, to November, 1853, inclusive, and during the years 1842 and 1857. In the first of the three series, given in the table below, calms were not included, and the third is a combination of the first and second, an allowance being made for calms in the first in the same proportion as shown in the second. Also (in the Addendum at the end of this zone) during the years 1870, 1871, and 1872, by Torbolof and Derbin.

(Nos. 241 to 248.) **Southern Siberia.**—*Continued.*

Nikolaievsk, mouth of the Amoor, during the years 1859 to 1864 inclusive, and 1866, by Degtinsky. Also in the Addendum, the year 1871, by Kudrin.

Omsk, from January, 1870, to May, 1872, by Znamenski; see Addendum.

Petropaulowski, Kamtschatka, during the years 1848, 1849 and 1850, and published in the Journal of the Hydrographic Department.

Semipalatinsk, during the years 1863 to 1866 inclusive, by Abramoff.

Udskoi Ostrog, by Middendorf, from September, 1844, to September 12, 1845, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
241. Semipalatinsk.	January	0	1	77	53	53	37	44	8	22				
	February	12	10	81	38	42	18	34	25	40				
	March	8	1	112	25	23	4	59	30	45				
	April	32	4	61	12	28	17	58	36	40				
	May	22	11	32	15	23	33	70	31	48				
	June	26	12	38	12	26	14	48	22	48				
	July	6	3	25	22	39	23	72	15	66				
	August	15	15	24	15	13	29	67	48	45				
	September	17	6	56	17	12	18	57	22	33				
	October	5	4	55	25	24	19	86	16	25				
	November	4	3	89	37	34	15	62	7	18				
	December	0	5	95	51	56	42	50	26	17				
	Spring	62	16	205	52	74	54	187	97	133	S. 80° 10′ W.	.05	N. 11° W.	.10½
	Summer	47	30	87	49	78	66	187	85	159	S. 78 24 W.	.19½	N. 66 W.	.17½
	Autumn	26	13	200	79	70	52	205	45	76	S. 5 6 W.	.12½	S. 51½ E.	.02
	Winter	12	16	253	142	151	97	128	59	79	S. 26 22 E.	.30½	S. 45½ E.	.23
	The year[3]	...	...	...	...	...	...	...	...	...	S. 14 24 W.	.11		
241(*a*). Akmollinsk.	....	See Addendum at the end of this Zone.												
242. Barnaule. December, 1849, to November, 1855.	January	85	459	4	722	1117	6791	345	477	...	S. 39 4 W.	.73		
	February	211	1197	0	1607	983	4348	515	1139	...	S. 35 54 W.	.41		
	March	287	1688	21	1855	590	4734	252	573	...	S. 23 45 W.	.36½		
	April	337	2041	11	593	802	4072	696	1448	...	S. 64 32 W.	.30		
	May	393	1253	201	1424	618	3667	1113	1331	...	S. 52 2 W.	.32		
	June	515	2020	156	1396	746	2209	1065	1893	...	S. 89 22 W.	.14		
	July	436	1970	384	2090	472	2702	651	1245	...	S. 9 47 W.	.11		
	August	880	2150	161	1241	680	3116	286	1485	...	S. 72 33 W.	.10		
	September	568	1292	81	1159	705	3987	912	1296	...	S. 47 38 W.	.28½		
	October	354	906	59	1066	948	4972	667	1028	...	S. 44 41 W.	.49		
	November	71	1234	102	421	899	5261	752	1260	...	S. 52 58 W.	.51		
	December	79	494	11	844	1288	6858	328	98	...	S. 45 0 W.	.60		
	Spring	339	1661	78	1291	670	4158	687	1117	...	S. 45 26 W.	.31½		
	Summer	627	2047	234	1576	633	2676	667	1541	...	S. 60 59 W.	.09½		
	Autumn	331	1144	81	882	851	4740	777	1195	...	S. 50 36 W.	.44½		
	Winter	125	717	5	1058	1129	5999	396	571	...	S. 36 37 W.	.63		
	The year[3]	355	1392	99	1202	821	4393	632	1106	...	S. 44 15 W.	.37		
1838, '50, '53 and '57.[1]	Spring	618	1421	53	741	722	3131	494	1039	613	S. 59 22 W.	.25		
	Summer	688	1765	169	1186	561	2248	460	1160	593	S. 69 17 W.	.07		
	Autumn	401	958	61	761	716	4198	395	799	442	S. 45 48 W.	.42		
	Winter	256	503	31	679	1032	4405	359	367	1004	S. 37 21 W.	.55		
	The year	1963	4647	314	3367	3031	13982	1708	3365	2652	S. 46 11 W.	.32		
Two preceding series combined.[2]	Spring	...	...	...	...	...	...	...	...	...	S. 51 30 W.	.28	N. 13 E.	.06½
	Summer	...	...	...	...	...	...	...	...	...	S. 64 0 W.	.08	N. 38 E.	.26
	Autumn	...	...	...	...	...	...	...	...	...	S. 48 15 W.	.43	S. 48 W.	.10
	Winter	...	...	...	...	...	...	...	...	...	S. 37 15 W.	.55	S. 26½ W.	.22½
	The year	...	...	...	...	...	...	...	...	...	S. 45 15 W.	.34½		

[1] This series is given for the purpose of showing the relative number of calms, which is omitted in the preceding series.

[2] By plotting.

[3] Computed from the resultants for the seasons.

(Nos. 241 to 248.) **Southern Siberia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
243. Irkutsk.	January	4097	34	1478	113	4165	23	0	90	...	S. 87° 6′ E.	.15	S. 46½° E.	.22½	465
	February	4707	0	279	40	4814	0	0	159	...	S. 83 5 E.	.02	S. 13 E.	.15½	424
	March	4283	0	100	20	5206	30	0	361	...	S. 12 45 W.	.07	S. ¼ W.	.21½	465
	April	5540	0	107	185	3516	97	29	525	...	N. 5 55 W.	.22	N. 6 W.	.07	450
	May	4439	17	34	334	3865	86	51	1174	...	N. 30 24 W.	.13	S. 54½ W.	.06	465
	June	4132	9	96	505	3775	44	70	1368	...	N. 32 45 W.	.11	S. 38½ W.	.07	450
	July	3559	27	18	256	4666	238	18	1217	...	S. 54 39 W.	.10	S. 18 W.	.21½	465
	August	4815	28	28	85	3880	57	9	1098	...	N. 23 38 W.	.18	N. 74 W.	.06	465
	September	5246	0	42	126	3382	0	0	1183	...	N. 15 0 W.	.27	N. 26 W.	.12½	450
	October	6339	0	109	109	2715	133	0	594	...	N. 4 46 W.	.38½	N. 3 W.	.23½	465
	November	6317	11	328	11	2825	22	0	486	...	N. 0 11 W.	.38	N. 3½ E.	.23	450
	December	6100	12	730	120	2811	12	0	215	...	N. 11 24 E.	.34	N. 24 E.	.20	465
	Spring	4754	6	80	180	4196	71	27	687	...	N. 21 50 W.	.09½	S. 18¼ W.	.06½	1380
	Summer	4169	21	47	282	4107	113	32	1228	...	N. 47 10 W.	.10	S. 36 W.	.10	1380
	Autumn	5967	4	160	82	2974	52	0	754	...	N. 5 43 W.	.34½	N. 5½ W.	.20	1365
	Winter	4968	15	829	91	3930	12	0	155	...	N. 35 56 E.	.13½	S. 67½ E.	.10	1354
	The year	4965	12	279	159	3802	62	15	706	...	N. 5 49 W.	.15	....	...	5479
	7 A. M.	4628	8	558	248	3661	85	23	788	...	N. 4 34 E.	.13			
	2 P. M.	4834	20	135	174	3975	66	15	781	...	N. 15 5 W.	.13			
	10 "	5253	8	69	90	3828	44	24	685	...	N. 12 21 W.	.18½			
244. Nertschinsk. December, 1849, to November, 1853.	January	974	462	308	00	103	667	3179	4307	...	N. 58 10 W.	.71	....	...	124
	February	623	1221	1013	00	52	546	1922	4623	...	N. 40 38 W.	.56½	....	...	113
	March	769	1912	973	192	125	984	1391	3654	...	N. 30 32 W.	.43	....	...	124
	April	341	1264	806	458	225	1343	2288	3275	...	N. 59 55 W.	.40½	....	...	120
	May	526	961	918	360	374	1114	1738	4009	...	N. 53 15 W.	.43½	....	...	124
	June	620	1631	837	1104	743	1068	1032	2965	...	N. 35 2 W.	.19	....	...	120
	July	514	1757	1358	1113	614	1474	1420	1750	...	N. 29 40 W.	.06	....	...	124
	August	774	1210	1234	922	839	1021	1325	2675	...	N. 42 29 W.	.17½	....	...	124
	September	784	905	1199	776	431	1152	886	3777	...	N. 39 0 W.	.30	....	...	120
	October	417	871	360	259	496	1388	1964	4245	...	N. 63 43 W.	.53	....	...	124
	November	434	508	149	136	186	595	2218	5774	...	N. 55 46 W.	.73½	....	...	120
	December	690	34	69	138	69	1862	1690	5448	...	N. 65 12 W.	.73	....	...	124
	Spring	545	1379	899	337	241	1147	1806	3646	...	N. 47 43 W.	.41½	....	...	368
	Summer	636	1533	1143	1046	732	1188	1259	2463	...	N. 54 0 W.	.19½	....	...	368
	Autumn	545	791	569	390	371	1045	1689	4599	...	N. 55 16 W.	.51½	....	...	364
	Winter	762	572	463	46	75	1025	2264	4793	...	N. 55 50 W.	.66	....	...	361
	The year	622	1069	769	455	355	1101	1754	3875	...	N. 52 12 W.	.43	....	...	1461
1842, '50, '53 & '57.	Spring	249	299	265	143	122	394	587	1039	2914	N. 58 18 W.	.22	....	...	368
	Summer	266	457	330	245	199	398	410	696	3552	N. 39 52 W.	.08½	....	...	368
	Autumn	102	142	134	87	165	452	588	1057	4309	N. 73 27 W.	.20	....	...	364
	Winter	117	45	28	29	52	132	290	447	5925	N. 64 13 W.	.10	....	...	360
	The year	734	943	757	504	538	1376	1875	3239	16700	N. 61 54 W.	.15	....	...	1460
2 foregoing combined.[1]	Spring	...	...	...	...	...	...	...	...	...	N. 51 30 W.	.32	N. 8 W.	.03½	
	Summer	...	...	...	...	...	...	...	...	...	N. 49 45 W.	.14	S. 61 E.	.16	
	Autumn	...	...	...	...	...	...	...	...	...	N. 60 15 W.	.35½	N. 81½ W.	.06½	
	Winter	...	...	...	...	...	...	...	...	...	N. 57 0 W.	.38	N. 62 W.	.08½	
	The year	...	...	...	...	...	...	...	...	...	N. 54 45 W.	.29			
244(*a*). Nertschinsk. 1870–1872.	See Addendum at the end of this Zone.														
245. Udskoi.	Spring	15	112	7	4	2	114	4	18	...	N. 29 15 W.	.09	N. 49 E.	.24	
	Summer	8	133	8	8	3	101	2	13	...	N. 38 55 E.	.14	N. 59½ E.	.36	
	Autumn	36	53	2	3	8	139	19	22	...	S. 86 57 W.	.28	N. 44½ W.	.08½	
	Winter	15	6	0	0	0	223	14	12	...	S. 53 38 W.	.81	S. 46½ W.	.59	
	The year	74	304	17	15	13	578	38	65	...	S. 67 58 W.	.24			

[1] By plotting.

(Nos. 241 to 248.) **Southern Siberia.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
246. Niko-laievsk, 1859–64 and 1866.	January	54	19	1	0	0	18	402	156	1					
	February	54	23	25	0	0	18	253	214	1					
	March	96	80	95	18	0	19	182	146	15					
	April	36	77	199	54	0	18	146	95	5					
	May	37	95	256	93	0	0	119	44	7					
	June	21	91	288	123	18	4	42	36	7					
	July	36	54	306	92	0	22	82	54	5					
	August	36	59	239	69	0	19	81	126	22					
	September	56	72	148	72	0	0	115	144	23					
	October	55	72	65	18	0	23	223	166	29					
	November	37	44	23	18	0	18	267	221	2					
	December	55	37	21	0	0	36	366	136	0					
	Spring	169	252	550	165	0	37	447	285	27	N. 22° 45′ E.	.23	East	.22	
	Summer	93	204	833	284	18	45	205	216	34	N. 79 59 E.	.41½	S. 75° E.	.05	
	Autumn	148	188	236	108	0	41	605	531	54	N. 45 41 W.	.41	N. 66 W.	.18	
	Winter	163	79	47	0	0	72	1021	506	2	N. 68 23 W.	.75½	N. 83½ W.	.08	
	The year	573	723	1666	557	18	195	2278	1538	117	N. 29 54 W.	.24½			
246(*a*). Nikolaivsk, 1871. See Addendum at the end of this Zone.															
247. Douai Light-house, 1866.	January	9	7	3	6	11	3	0	5	13					
	February	23	12	3	13	7	5	0	14	7					
	March	25	8	1	20	22	4	2	8	3					
	April	11	1	3	20	35	8	0	3	9					
	May	18	6	6	24	14	5	5	4	11					
	June	6	4	7	24	34	6	1	3	5					
	July	1	2	1	24	29	15	4	3	14					
	August	15	4	7	25	11	7	2	2	20					
	September	8	7	4	44	16	5	1	3	2					
	October	11	14	4	9	30	8	7	9	1					
	November	12	4	2	12	11	6	5	35	3					
	December	27	18	1	14	4	4	2	18	5					
	Spring	54	15	10	64	71	17	7	15	23	S. 34 20 E.	.23	S. 19½ E.	.08	
	Summer	22	10	15	73	74	28	7	8	39	S. 20 26 E.	.40	S. 8 E.	.26	
	Autumn	31	25	10	65	57	19	13	47	6	S. 22 3 E.	.14	S. 67 W.	.05	
	Winter	59	37	7	33	22	12	2	37	25	N. 19 3 E.	.26	N. 3 W.	.36	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 41 16 E.	.16			
247(*a*). Douai, 1863 to 1865. See Addendum at the end of this Zone.															
248. Petropau-lowski.	January	2313	1759	814	1140	260	489	1010	2215	...	N. 0 55 W.	.37	N. 13½ W.	.21½	93
	February	2265	2136	1100	1100	162	388	680	2168	...	N. 12 24 E.	.42	N. 10 E.	.25½	85
	March	1134	1581	1890	1443	653	550	1443	1306	...	N. 48 48 E.	.17	S. 67½ E.	.09½	93
	April	885	2164	1377	1443	590	361	983	2197	...	N. 28 25 E.	.24	N. 53½ E.	.08½	90
	May	493	1345	1166	2377	1838	269	1525	986	...	S. 41 9 E.	.21	S. 16½ E.	.33	93
	June	335	1579	718	2105	1914	287	1340	1722	...	S. 30 17 E.	.11	S. 2½ E.	.25½	90
	July	584	1642	657	2701	2044	219	839	1314	...	S. 51 16 E.	.23	S. 24 E.	.33	93
	August	344	1271	824	1512	1924	172	1032	2921	...	N. 67 33 W.	.04½	S. 31 W.	.16½	93
	September	720	880	1200	1600	1040	160	2240	2160	...	N. 58 10 W.	.11	S. 53½ W.	.17	90
	October	1232	1345	1373	896	364	112	2157	2521	...	N. 20 15 W.	.30½	N. 50 W.	.19½	93
	November	1476	1980	939	637	0	34	1846	3088	...	N. 15 30 W.	.47	N. 30 W.	.34	90
	December	1465	3773	1209	660	110	439	1135	1209	...	N. 26 25 E	.45½	N. 32½ E.	.29	93
	Spring	837	1697	1478	1754	1027	393	1317	1496	...	N. 66 37 E.	.14	S. 39½ E.	.13½	276
	Summer	421	1497	733	2106	1961	226	1070	1986	...	S. 40 56 E.	.10	S. 5½ E.	.23½	276
	Autumn	1143	1402	1171	1044	468	102	2081	2590	...	N. 22 5 W.	.29	N. 54½ W.	.19	273
	Winter	2014	2556	1041	967	177	439	942	1864	...	N. 13 35 E.	.40½	N. 12½ E.	.24	271
	The year	1104	1789	1105	1468	908	290	1352	1984	...	N. 15 21 E.	.16½			

[1] Computed from the resultants for the seasons.

(Nos. 249 to 251.) **Pacific Ocean**, west of longitude 180°.

Computed from observations for an aggregate period of 68 days, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under direction of Capt M. F. Maury, Superintendent.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																			
249. Long. 135° to 150° E.	Spring	0	0	2	0	0	0	1	0	2	1	5	1	3	1	2	3	0	S. 79° 11′ W.	.43	7
250. Long. 140 to 150 E.	Summer	10	11	6	0	15	1	13	6	34	11	15	12	12	3	1	4	0	S. 9 3 W.	.29	52
251. Long. 160 to 170 E.	Summer	0	1	0	0	1	0	2	1	2	1	1	0	0	0	0	0	0	S. 22 17 E.	.61	9

(Nos. 233(*a*) to 247(*a*).) **Addendum to Zone No. 8.**

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.
		Relative Prevalence of Winds from the Different Points of the Compass.								
233(*a*). Pensa, 1862–70.	January	5.8	1.9	5.1	19.0	15.7	24.8	8.3	19.1	
	February	8.4	7.4	2.5	10.0	11.2	28.2	12.4	19.9	
	March	7.6	7.8	5.3	12.4	19.0	24.6	10.3	13.1	
	April	12.2	8.0	2.5	8.7	12.7	17.9	13.2	24.8	
	May	12.7	4.7	4.2	8.8	5.1	27.7	11.3	25.5	
	June	14.4	8.7	5.8	5.1	4.5	21.3	16.7	23.4	
	July	17.1	10.2	5.1	13.7	6.8	15.8	13.2	18.0	
	August	10.3	10.3	3.1	10.3	7.3	19.8	15.5	23.6	
	September	11.5	6.4	2.1	7.8	6.1	21.7	18.2	26.2	
	October	8.6	8.3	2.8	13.3	8.8	25.3	10.9	21.8	
	November	4.9	9.7	2.5	19.9	12.2	29.0	8.4	12.4	
	December	9.3	3.1	0.5	8.0	10.9	29.3	13.2	25.6	
240(*a*). Omsk, 1870–1872.	January	1	2	5	8	4	6	4	1	49
	February	2	1	4	6	7	13	8	1	41
	March	2	1	2	8	14	17	34	1	43
	April	2	1	5	12	22	3	5	2	23
	May	7	0	6	13	4	16	15	3	16
	June	5	7	6	10	6	3	3	10	29
	July	13	6	11	5	4	5	4	3	35
	August	1	1	2	4	7	4	8	2	51
	September	3	0	1	3	12	9	17	0	15
	October	5	6	1	4	3	18	12	3	10
	November	4	1	2	4	5	11	15	3	12
	December	1	1	3	2	6	10	9	2	24
	The year	46	27	48	79	94	115	134	31	348

Time of the year.		North. No. of obs.	North. Force.	N. E. No. of obs.	N. E. Force.	East. No. of obs.	East. Force.	S. E. No. of obs.	S. E. Force.	South. No. of obs.	South. Force.	S. W. No. of obs.	S. W. Force.	West. No. of obs.	West. Force.	N. W. No. of obs.	N. W. Force.	Calm or variable.
		Relative Prevalence and Force of Winds from the Different Points of the Compass.																
Omsk. 1870	October	11	4.4	19	3.3	2	2.0	2	2.0	4	2.0	7	3.7	2	3.0	5	3.2	14
	November	7	2.3	12	4.7	2	2.0	5	2.4	6	3.3	26	2.8	15	2.3	3	2.7	14
	December	1	2.0	17	3.9	12	3.5	9	3.1	22	2.5	15	3.6	5	2.0	7	2.0	5
1871	January	0	0	14	2.4	7	2.3	10	2.2	6	2.0	23	2.1	10	3.0	1	4.0	22
	February	3	5.3	5	3.6	2	2.0	20	3.3	13	2.8	26	3.0	2	2.0	0	0	13
	March	0	0	5	2.0	0	0	6	2.0	5	3.2	41	3.0	1	2.0	2	2.0	33
	April	1	2.0	9	3.1	12	3.2	5	2.0	1	2.0	14	2.6	12	2.3	9	2.7	27
	May	7	3.4	13	3.5	17	4.1	4	5.0	4	4.0	12	2.8	8	3.8	9	2.7	19
	June	2	2.0	14	3.6	2	5.0	6	3.0	3	2.0	17	3.0	20	3.0	12	2.8	14
	July	12	2.7	8	2.8	8	2.8	8	2.3	1	2.0	5	2.4	12	2.2	12	2.2	27
	August	2	2.0	15	2.7	1	2.0	10	3.4	1	4.0	13	2.6	1	2.0	13	2.6	37
	September	7	3.3	1	2.0	0	0	5	2.4	1	2.0	17	3.5	3	4.0	13	2.6	49
	October	0	0	12	2.5	0	0	3	2.0	2	2.0	25	2.6	7	2.9	10	2.8	34
	November	1	2.0	3	3.3	2	4.0	10	3.4	2	6.0	34	2.4	14	3.9	9	4.9	15
	December	0	0	0	0	0	0	29	2.2	8	3.0	32	2.9	3	2.7	4	2.5	17
	The year	35	2.8	99	2.8	51	3.1	116	2.7	47	2.9	259	2.7	93	2.8	94	2.8	301

(Nos. 233(*a*) to 247(*a*).) **Addendum to Zone No. 8.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Ratio of N. to S.	Ratio of E. to W.
241(*a*). Akmollinsk.	1870											
	December	1	6	2	2	5	9	5	0	1		
	1871											
	January	1	5	1	0	4	19	0	0	1		
	February	0	0	1	0	6	19	2	0	0		
	March	0	4	0	1	2	22	0	0	2		
	April	0	12	0	0	11	5	0	0	2		
	May	0	6	0	1	2	21	0	0	1		
	June	0	17	0	0	0	6	0	3	4		
	July	1	4	3	0	5	7	5	6	0		
	August	0	17	0	0	0	6	0	4	4		
	September	3	12	0	0	3	6	0	0	6		
	October	0	0	0	2	0	25	0	0	4		
	November	1	0	0	0	2	20	1	1	5		
247(*a*). Douai.	1863–65											
	January	28.50	18.27	15.61	14.64	0.85	2.80	2.97	16.36	...	1 : 0.29	1 : 0.46
	February	22.06	11.93	21.13	24.92	3.55	3.59	4.48	8.34	...	1 : 0.76	1 : 0.28
	March	17.88	7.10	14.72	32.83	7.60	7.39	4.08	8.40	...	1 : 1.43	1 : 0.36
	April	16.71	6.77	11.84	32.51	10.44	3.93	6.50	11.29	...	1 : 1.35	1 : 0.42
	May	16.57	7.06	9.41	27.71	13.40	10.35	6.35	9.15	...	1 : 1.57	1 : 0.59
	June	19.83	7.01	5.39	20.14	24.76	8.85	6.04	7.99	...	1 : 1.54	1 : 0.70
	July	24.50	6.27	4.67	24.65	23.34	4.86	5.37	6.35	...	1 : 1.42	1 : 0.47
	August	10.55	5.66	6.14	32.82	30.61	6.49	4.08	3.65	...	1 : 3.53	1 : 0.32
	September	10.21	6.71	7.26	28.96	24.62	3.85	5.77	12.64	...	1 : 1.94	1 : 0.52
	October	15.62	6.55	5.32	28.14	19.76	5.40	3.99	15.24	...	1 : 1.42	1 : 0.82
	November	15.71	5.94	6.73	23.63	7.20	9.76	7.47	23.56	...	1 : 0.90	1 : 1.12
	December	21.29	6.72	10.63	18.23	6.49	3.76	7.10	25.79	...	1 : 0.53	1 : 1.03
	Spring	17.05	6.98	11.99	31.02	10.48	7.22	5.64	9.61	...	1 : 1.45	1 : 0.45
	Summer	18.29	6.31	5.40	25.87	26.24	6.73	5.16	6.00	...	1 : 1.92	1 : 0.48
	Autumn	13.85	6.40	6.44	26.91	17.19	6.34	5.74	17.15	...	1 : 1.35	1 : 0.74
	Winter	23.95	12.31	15.79	19.26	3.63	3.38	4.85	16.83	...	1 : 0.49	1 : 0.53
	The year	18.28	8.00	9.90	25.76	14.38	5.92	5.35	12.40	...	1 : 1.19	1 : 0.54

Relative Prevalence and Force of Winds from the Different Points of the Compass.

Time of the year.		North. No. of obs.	North. Force.	N. E. No. of obs.	N. E. Force.	East. No. of obs.	East. Force.	S. E No. of obs.	S. E Force.	South. No. of obs.	South. Force.	S. W. No. of obs.	S. W. Force.	West. No. of obs.	West. Force.	N. W. No. of obs.	N. W. Force.	Calm or variable.
244(*a*). Nertschinsk.	1870																	
	January	0	0	1	2.0	0	0	0	0	0	0	0	0	3	2.0	14	2.9	75
	February	0	0	7	2.0	3	2.0	0	0	0	0	3	2.0	1	2.0	20	3.1	50
	March	1	2.0	11	2.0	3	2.0	3	2.7	1	2.0	2	4.0	5	4.0	15	3.1	52
	April	2	6.0	2	3.0	1	2.0	3	2.7	2	3.0	9	4.2	1	2.0	35	4.5	35
	May	8	5.1	9	4.2	4	3.0	4	3.0	2	3.0	4	3.0	6	4.0	30	3.6	26
	June	3	3.3	5	2.8	7	3.1	10	3.2	0	0	0	0	1	4.0	13	2.5	51
	July	3	2.7	3	2.0	6	2.3	11	2.5	0	0	6	3.0	3	2.3	7	2.6	54
	August	3	2.7	7	2.9	10	2.2	2	3.0	6	2.0	6	2.0	1	2.0	6	2.7	52
	September	5	3.6	4	2.5	3	2.0	2	4.0	1	2.0	4	2.5	8	2.7	15	3.2	48
	October	6	2.3	5	2.8	2	4.0	0	0	4	2.5	5	2.8	10	2.2	17	3.3	44
	November	1	6.0	0	0	0	0	4	2.0	2	2.0	9	2.2	3	2.0	7	4.3	64
	December	1	4.0	9	2.7	0	0	0	0	0	0	1	2.0	0	0	16	3.6	66
	The year	33	3.7	63	2.7	39	2.5	39	2.8	18	2.3	49	2.9	42	2.8	195	3.5	617

(Nos. 233(*a*) to 247(*a*).) **Addendum to Zone No. 8.**—*Continued.*

Time of the year.	North. No. of obs.	North. Force.	N. E. No. of obs.	N. E. Force.	East. No. of obs.	East. Force.	S. E. No. of obs.	S. E. Force.	South. No. of obs.	South. Force.	S. W. No. of obs.	S. W. Force.	West. No. of obs.	West. Force.	N. W. No. of obs.	N. W. Force.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
244(*a*). Nertschinsk.—*Continued.*																			
1871																			
January	1	4.0	2	2.0	0	0	0	0	0	0	2	2.0	7	2.9	6	2.3	75		
February	6	2.7	6	2.0	2	2.0	0	0	0	0	0	0	1	2.0	14	2.9	55		
March	4	3.0	11	2.0	3	2.0	2	2.0	2	2.0	5	2.0	8	3.0	7	4.3	51		
April	12	4.0	6	2.3	5	2.0	7	2.0	2	2.0	4	2.0	7	3.1	21	3.0	26		
May	9	1.1	10	1.2	1	1.0	6	1.7	4	1.2	5	1.8	6	1.0	21	1.7	31		
June	11	1.1	7	1.0	4	1.5	7	1.6	3	1.3	9	1.0	6	1.2	12	1.1	31		
July	1	1.0	2	1.0	3	1.0	3	1.0	2	1.0	4	1.0	5	1.2	22	1.2	51		
August	9	1.6	5	1.2	2	1.5	3	1.0	1	1.0	4	1.0	2	1.5	14	1.3	53		
September	2	2.0	4	1.0	1	2.0	2	1.5	2	1.0	5	1.6	4	1.0	18	1.6	52		
October	4	1.2	1	2.0	0	0	1	1.0	1	2.0	6	1.3	4	1.2	29	1.5	47		
November	9	1.2	3	1.7	0	0	0	0	0	0	1	2.0	3	1.0	25	1.6	49		
December	1	3.0	6	1.0	8	1.0	3	1.0	0	0	0	0	1	1.0	7	1.3	67		
The year	69	2.0	63	1.5	29	1.5	34	1.5	17	1.4	45	1.5	54	1.9	196	1.8	588		
1872																			
January	0	0	3	1.0	12	1.0	0	0	0	0	0	0	0	0	2	1.0	76		
February	0	0	3	1.0	4	1.0	2	1.0	0	0	1	1.0	1	1.0	10	2.9	66		
March	5	2.8	6	1.3	1	1.0	0	0	3	3.7	2	3.5	5	2.4	22	2.7	49		
April	5	2.8	4	4.5	4	4.0	3	1.7	8	4.2	10	3.3	6	2.5	21	4.1	29		
May	1	5.0	8	3.2	2	3.0	3	3.7	3	4.0	5	3.6	9	3.6	24	4.0	38		
June	1	4.0	1	2.0	2	2.0	9	2.4	10	2.0	11	2.6	7	2.9	5	3.2	44		
July	2	2.5	3	1.7	3	1.7	4	1.5	8	1.5	4	2.0	3	1.3	5	2.8	61		
August	10	3.8	7	3.7	4	2.0	5	1.4	5	3.0	10	2.3	3	1.7	10	2.2	39		
September	2	2.5	1	1.0	3	1.7	5	2.8	5	3.0	13	2.5	4	3.2	3	3.3	54		
October	0	0	1	1.0	2	1.5	1	2.0	1	1.0	7	1.9	16	3.0	8	4.2	57		
November	2	4.0	4	2.5	4	1.2	1	1.0	2	1.0	6	1.8	9	1.3	11	2.6	51		
December	2	1.0	0	0	2	1.0	0	0	0	0	3	1.3	5	1.0	6	3.5	75		
The year	30	3.2	41	2.5	43	1.7	33	2.1	45	2.7	72	2.5	68	2.5	127	3.3	639		
246(*a*). Nikolaievsk on Amoor.																			
1871																			
January	0	0	3	1.7	0	0	2	1.5	0	0	2	2.0	12	2.0	47	2.7	27		
February	3	2.0	3	4.7	0	0	1	1.0	0	0	0	0	6	1.7	52	2.5	19		
March	2	1.0	11	1.4	0	0	2	1.0	0	0	4	2.0	3	1.7	41	2.1	30		
April	0	0	17	2.1	0	0	33	2.3	0	0	1	1.0	0	0	10	2.2	29		
May	0	0	41	1.8	0	0	20	2.1	0	0	7	1.7	1	2.0	3	1.3	21		
June	0	0	6	1.3	2	1.5	44	1.9	0	0	2	1.5	1	2.0	6	1.5	29		
July	0	0	0	0	0	0	59	3.5	0	0	1	4.0	0	0	13	3.0	20		
August	0	0	12	3.7	0	0	19	4.0	0	0	4	3.2	7	4.4	27	3.0	24		
September	3	2.7	14	3.6	2	2.0	8	3.2	0	0	1	6.0	6	5.0	35	4.4	21		
October	0	0	11	3.4	0	0	7	4.0	0	9	9	5.0	5	3.8	40	3.6	21		
November	3	2.0	13	3.5	2	4.0	6	5.3	0	0	0	0	5	4.2	38	3.9	23		
December	1	2.0	4	3.5	0	0	0	0	0	0	0	0	3	2.3	74	3.7	11		
Spring	2	1.0	69	1.7	0	0	55	1.8	0	0	12	1.5	4	1.8	54	1.8	80	N.41°39′E.	.20
Summer	0	0	18	2.5	2	1.5	122	3.1	0	0	7	2.9	8	3.2	46	2.5	73	S. 50 33 E.	.26
Autumn	6	2.3	38	3.5	4	3.0	21	4.1	0	0	10	5.5	16	4.3	113	3.9	65	N.32 13 W.	.39
Winter	4	2.0	10	3.3	0	0	3	1.2	0	0	2	2.0	21	2.0	173	2.9	57	N.46 13 W.	.70
The year	12	1.7	135	2.7	6	2.2	201	2.5	0	0	31	2.9	49	2.8	386	2.7	275	N.24 51 W.	.22

Monsoon influences.

Spring	S. 77½ E.	.23
Summer	S. 39½ E.	.47
Autumn	N. 43 W.	.16
Winter	N. 55 W.	.50

ZONE No. 9.

LATITUDE 45° TO 50° NORTH.

The data for the study of the winds of this zone consist of observations made at 342 permanent stations on land, where the observations were regularly recorded, or during journeys and travels, where, for the most part, only a transient sojourn was made at any one place, for an aggregate period of over 1696 years; and for about 17 years at sea. The distribution is as follows:—

Where observed.	No. of stations.	Aggregate length of time.
Pacific Ocean	. . .	3109 days.
America, west of the Mississippi River	61	Over 202 years.
America, east of the Mississippi River	43	Nearly 200 years.
Atlantic Ocean	. . .	3070 days.
Europe	231	1246½ years.
Asia	71	Nearly 35 years, besides general descriptions of the winds observed during journeys, travels, etc., for an aggregate period of perhaps not less than twenty years more.

(Nos. 1 to 11.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of six years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			
1. Longitude, 160° to 165° W.	Spring	16	27	5	25	3	18	7	22	6	47	13	82	19	40	50	4	12	N. 81° 53′ W.	.32	144
	Summer	21	25	9	22	8	11	9	16	3	10	10	17	27	31	18	20	14	N. 42 0 W.	.25	90
2. Longitude, 155° to 160° W.	Spring	10	11	8	26	13	15	6	31	14	55	28	71	54	123	33	52	8	N. 89 6 W.	43	186
	Summer	6	16	10	17	11	38	0	37	21	64	41	85	38	102	19	31	4	S. 69 30 W.	.57	180
3. Longitude, 150° to 165° W.	Autumn	2	5	0	5	0	0	2	4	5	4	8	24	7	20	6	3	1	N. 83 52 W.	.53	58
4. Longitude, 150° to 155° W.	Spring	6	15	0	4	3	20	5	42	34	81	13	45	45	75	20	28	1	S. 60 50 W.	.45	146
	Summer	19	28	13	14	13	6	19	43	2	54	31	92	60	50	30	53	22	S. 85 22 W.	.35	183
5. Longitude, 145° to 150° W.	Spring	2	7	4	7	3	28	9	38	4	39	10	37	7	23	6	33	2	S. 37 46 W.	.29	84
	Summer	11	21	10	21	11	22	13	55	27	69	41	196	54	183	12	60	20	S. 78 2 W.	.49	275
	Autumn	6	6	9	3	1	5	0	9	1	21	9	32	20	17	9	16	5	S. 87 58 W.	.42	56
6. Longitude, 140° to 145° W.	Spring	12	2	0	1	1	6	1	18	0	13	13	15	6	29	3	8	2	S. 76 50 W.	.39	43
	Summer	20	14	4	7	3	4	0	20	13	35	24	72	26	52	31	34	3	N. 89 25 W.	.49	121
	Autumn	1	13	0	5	6	8	8	13	3	25	22	66	42	21	18	33	4	S. 81 18 W.	.49	96
7. Longitude, 120° to 165° W.	Winter	2	17	2	3	0	26	0	17	6	14	7	31	6	37	8	10	1	S. 75 42 W.	.26	62
8. Longitude, 135° to 140° W.	Spring	0	0	0	0	0	0	0	3	0	15	4	10	2	8	2	0	0	S. 55 37 W.	.75	15
	Summer	24	17	7	2	2	16	2	28	12	35	27	25	25	95	40	81	19	N. 67 3 W.	.46	152
	Autumn	8	6	1	2	1	10	1	4	4	12	4	48	8	35	15	15	5	N. 84 45 W.	.51	60
9. Longitude, 130° to 135° W.	Summer	7	10	2	4	1	1	1	12	2	12	15	22	4	36	11	28	13	N. 73 27 W.	.46	57
10. Longitude, 120° to 135° W.	Spring	4	4	0	4	0	6	2	21	1	15	2	0	0	5	12	26	0	N. 66 50 W.	.10	34
	Autumn	8	43	2	7	0	0	0	8	13	21	5	20	4	8	18	57	3	N. 35 2 W.	.39	39
11. Longitude, 120° to 130° W.	Summer	3	3	0	0	0	3	0	0	10	18	1	9	9	31	39	53	3	N. 57 20 W.	.63	61

(Nos. 12 to 23.) **Washington.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Camp Steele,	U. S. Army Surgeons,	4	2	1864 to 1869 inclusive.
Camp Pickett,	" " "	3	11	1859 to 1863 inclusive.
Camp Semiahmoo,	" " "	1	4	1859 and 1860.
Cape Disappointment,	" " "	3	9	1864 to 1869 inclusive.
Fort Bellingham,	" " "	1	11	1857, 1858 and 1859.
Fort Chehalis,	" " "	0	10	1860 and 1861.
Fort Colville,	" " "	7	4	1860 to 1869 inclusive.
Fort Simcoe,	" " "	2	0	1857, 1858 and 1859.
Fort Steilacoom,	" " "	16	2	1849 to 1869 inclusive.
Fort Townshend,	" " "	1	2	1859, 1860 and 1861.
Fort Vancouver,	U. S. A. Surg. and C. Hall,	17	7	June, 1833, to June, 1834, and 1849 to 1868, [both inclusive.
Fort Walla-walla,	U. S. Army Surgeons,	8	10	1857 to 1867 inclusive.
Neeah Bay,	Jas. G. Swan & A. Sampson,	4	1	1862 to 1867 inclusive.
Port Angelos,	A. M. Sampson,	0	9	1869.
Port Townshend,	S. S. Bulkley,	0	9	1867 and 1868.
Walla-walla,	…………………	0	2	November and December, 1869.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
12. Neeah Bay. Surface wind.	Spring	0	68	101	164	39	214	306	52	55	S. 45° 57′ W.	.32	N. 55° W.	.12
	Summer	2	11	30	145	32	332	458	52	220	S. 61 18 W.	.52½	S. 81 W.	.24
	Autumn	1	4	210	244	55	194	209	22	153	S. 3 55 E.	.32	S. 79 E.	.16
	Winter	5	39	236	235	88	202	129	28	16	S. 21 51 E.	.38	S. 76½ E.	.28
	The year[3]	…	…	…	…	…	…	…	…	…	S. 24 43 W.	.31½		
Motion of clouds.	Spring	22	0	7	10	59	10	5	1	0	S. 1 28 E.	.44	S. 44 E.	.20
	Summer	0	1	1	11	9	14	12	0	0	S. 25 33 W.	.60	S. 28 W.	.27
	Autumn	0	3	1	4	1	13	4	4	0	S. 51 18 W.	.43	N. 83 W.	.21
	Winter	0	39	2	11	2	20	16	2	92	N. 48 51 E.	.08½	N. 29 E.	.40
	The year[3]	…	…	…	…	…	…	…	…	…	S. 23 29 W.	.33		
Two preceding combined.	Spring	22	68	108	174	98	224	311	53	55	S. 39 57 W.	.32	N. 63 W.	.09
	Summer	2	12	31	156	41	346	470	52	220	S. 59 55 W.	.52	N. 86 W.	.32
	Autumn	1	7	211	248	56	207	213	26	153	S. 2 12 E.	.31½	S. 77 E.	.14
	Winter	5	78	238	246	90	222	145	30	16	S. 22 58 E.	.34½	S. 83 E.	.26
	The year[3]	…	…	…	. .	…	…	…	…	…	S. 23 26 W.	.31		
13. San Juan Island.[1]	January	182	62	82	141	44	79	29	24	2				
	February	90	47	55	154	71	75	36	24	9				
	March	97	63	74	175	92	114	34	35	13				
	April	48	22	68	153	146	187	30	17	12				
	May	73	10	25	70	168	226	35	14	16				
	June	33	11	11	84	148	209	4	5	8				
	July	38	14	10	73	161	218	21	12	5				
	August	32	21	17	106	250	218	61	15	13				
	September	54	41	37	164	159	170	17	28	0				
	October	74	74	40	169	97	105	44	39	12				
	November	144	87	74	164	111	80	19	45	3				
	December	183	71	83	187	69	68	49	47	3				
	Spring	218	95	167	398	406	527	99	66	41	S. 0 22 W.	.36	S. 25 W.	.07
	Summer	103	46	38	263	559	645	86	32	26	S. 16 28 W.	.60½	S. 35 W.	.35
	Autumn	272	202	151	497	367	355	80	112	15	S. 26 19 E.	.26	N. 54 E.	.11
	Winter	455	180	220	482	184	222	114	95	14	S. 84 26 E.	.17	N. 49½ E.	.31
	The year[3]	…	…	…	…	…	…	…	…	…	S. 5 20 E.	.30		
14. Port Townshend.[2]	Spring	23	17	12	178	38	40	30	181	7	S. 51 18 W.	.09	N. 85 E.	.02½
	Summer	53	1	4	26	1	14	58	64	60	N. 52 16 W.	.40½	N. 36½ W.	.38
	Autumn	12	0	0	60	7	9	15	12	66	S. 19 37 E.	.21	S. 50 E.	.21
	Winter	40	13	24	281	68	103	101	146	35	S. 13 35 W.	.24	S. 12½ E.	.17½
	The year[3]	…	…	…	…	…	…	…	…	…	S. 58 9 W.	.11		

[1] Camps Pickett and Steele. [2] Including also the observations made at the Fort.

[3] Computed from the resultants for the seasons.

(Nos. 12 to 23.) **Washington.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
15. Camp Semiahmoo and Fort Bellingham.	January	90	15	26	34	87	15	8	2	2					
	February	90	19	30	21	69	6	10	7	5					
	March	53	38	37	62	132	30	15	5	0					
	April	23	40	36	32	136	25	45	6	17					
	May	26	13	20	47	146	33	49	11	13					
	June	11	4	20	48	141	34	64	19	22					
	July	1	0	8	42	121	36	55	3	13					
	August	6	19	13	18	56	44	23	2	5					
	September	42	68	8	84	56	57	16	24	5					
	October	67	77	5	76	82	29	20	15	0					
	November	108	49	21	64	66	23	9	7	12					
	December	119	43	23	58	96	10	11	10	2					
	Spring	120	91	93	141	414	88	109	22	30	S. 10° 41′ E.	.34½	S. 1½° W.	.12	
	Summer	18	23	41	108	318	114	142	24	40	S. 14 3 W.	.53	S. 34 W.	.35	
	Autumn	217	194	34	224	204	109	45	46	17	S. 73 13 E.	.17	N. 29 E.	.20	
	Winter	299	77	79	113	252	31	29	19	9	N. 84 43 E.	.16½	N. 23 E.	.26	
	The year[3]	..	...	...	...	...	...	...	...	...	S. 16 27 E.	.23			
16. Northwestern Washington.[1]	Spring	397	389	380	917	976	1012	553	371	135	S. 9 12 W.	.27½	S. 34½ W.	.05	1710
	Summer	176	294	129	592	919	1357	773	197	352	S. 32 11 W.	.44	S. 58 W.	.26	1496
	Autumn	505	606	396	1099	640	852	361	273	255	S. 26 30 E.	.20	N. 62½ E.	.12	1662
	Winter	802	414	562	1158	598	639	390	304	74	S. 47 49 E.	.17	N. 50 E.	.18	1647
	The year[3]	...	...	...	...	...	...	...	...	...	S. 3 55 W.	.23½			
17. Cape Disappointment.	January	16	127	38	80	18	52	3	38	...	....	...	....	...	124
	February	10	39	27	108	17	50	24	62	...	....	...	....	...	113
	March	10	44	39	66	26	98	33	56	...	....	...	....	...	124
	April	9	49	9	63	18	63	63	86	...	....	...	....	...	120
	May	14	23	2	55	13	49	61	61	...	....	...	....	...	93
	June	11	5	0	41	15	64	66	66	...	....	...	....	...	90
	July	12	11	5	29	8	38	83	91	...	....	...	....	...	93
	August	20	13	0	13	4	32	74	122	...	....	...	....	...	93
	September	33	15	10	41	14	86	68	89	...	....	...	....	...	120
	October	35	35	34	77	34	96	62	92	...	....	...	....	...	155
	November	15	48	22	96	34	80	7	56	...	....	...	....	...	120
	December	34	56	40	80	12	95	6	49	...	....	...	....	...	124
	Spring	33	116	50	184	57	210	157	203	...	S. 67 36 W.	.20	S. 6 W.	.05	337
	Summer	43	29	5	83	27	134	223	279	...	N. 79 22 W.	.53½	N. 69½ W.	.37	276
	Autumn	83	98	66	214	82	262	137	237	...	S. 64 6 W.	.19	S. 58 E.	.05½	395
	Winter	60	222	105	268	47	197	33	149	...	S. 72 54 E.	.17	S. 86 E.	.34½	361
	The year[3]	...	...	...	...	...	...	...	...	...	S. 81 14 W.	.18	....	...	1369
18. Southwestern Washington.[2]	Spring	60	131	92	208	66	243	226	260	...	S. 79 2 W.	.20	S. 86 W.	.05	429
	Summer	58	38	5	83	27	140	253	303	...	N. 76 28 W.	.54	N. 67 W.	.41	307
	Autumn	101	102	84	271	175	316	143	258	...	S. 40 37 W.	.21	S. 6½ E.	.12½	486
	Winter	72	231	249	334	62	203	36	164	...	S. 75 38 E.	.27	S. 85½ E.	.41	451
	The year[3]	...	...	...	...	...	...	...	...	...	S. 76 43 W.	.15	....	...	1673
19. Fort Steilacoom.	January	92	299	306	257	166	399	169	104	31	....	...	....	...	558
	February	94	209	155	222	210	345	141	208	16	....	...	....	...	509
	March	115	149	186	235	224	362	230	187	16	....	...	....	...	527
	April	125	183	95	154	172	304	285	319	7	....	...	....	...	510
	May	156	132	43	84	120	305	299	348	24	....	...	....	...	496
	June	140	111	23	72	121	285	390	398	12	....	...	....	...	480
	July	186	109	35	32	121	238	408	395	1	....	...	....	...	465
	August	217	135	37	45	82	197	394	453	36	....	...	....	...	496
	September	174	169	84	137	128	279	249	335	0	....	...	....	...	510
	October	158	224	114	209	215	392	233	257	17	....	...	....	...	558
	November	99	196	148	252	285	389	201	158	27	....	...	....	...	540
	December	115	287	211	334	321	375	98	60	8	....	...	....	...	558
	Spring	396	464	324	473	516	971	814	854	47	S. 79 25 W.	.23½	S. 79 33 W.	.04½	1533
	Summer	543	355	95	149	324	720	1192	1246	49	N. 70 56 W.	.48	N. 53½ W.	.32	1441
	Autumn	431	589	346	598	628	1060	683	750	44	S. 62 2 W.	.17	S. 44½ E.	.06	1608
	Winter	301	795	672	813	697	1119	408	372	55	S. 20 19 E.	.19	S. 6½ E.	.29	1625
	The year[3]	...	...	...	...	...	...	...	...	...	S. 79 23 W.	.19½	....	...	6207

[1] Camps Pickett, Steele, and Semiahmoo, Forts Bellingham and Townshend, Neeah Bay, Port Townshend, and Port Angelos. [2] Cape Disappointment and Fort Chehalis.
[3] Computed from the resultants for the seasons.

(Nos. 12 to 23.) **Washington.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
20. Fort Simcoe.	Spring	39	25	58	20	90	113	147	41	109	S. 59° 12′ W.	.30	N. $32\frac{1}{2}$° W.	.04	214
	Summer	42	21	89	36	93	57	119	32	63	S. 33 35 W.	.17	N. 77 E.	.15	184
	Autumn	7	9	25	27	50	111	121	19	177	S. 53 23 W.	.37	S. 54 W.	.07	182
	Winter	10	12	5	8	53	85	86	14	174	S. 56 34 W.	.37	S. $67\frac{1}{2}$ W.	$.07\frac{1}{2}$	149
	The year[4]	...	...	...	...	...	...	...	...	...	S. 53 5 W.	.30	....	...	728
21. Fort Vancouver.[1]	January	85	196	436	438	86	99	130	160	32	....	...	....	...	558
	February	99	144	458	395	91	151	138	160	30	....	...	....	...	537
	March	69	177	371	357	129	224	211	178	0	....	...	....	...	589
	April	58	108	176	271	207	240	301	232	24	....	...	....	...	540
	May	58	68	121	176	120	242	364	284	19	....	...	....	...	496
	June	60	81	127	191	120	209	411	317	1	....	...	....	...	540
	July	48	54	60	107	86	145	576	375	3	....	...	....	...	465
	August	67	51	72	108	73	163	494	278	2	....	...	....	...	496
	September	56	64	199	138	77	139	359	212	1	....	...	....	...	450
	October	101	212	241	228	102	147	294	199	6	....	...	....	...	558
	November	75	182	232	449	64	109	214	172	8	....	...	....	...	540
	December	127	210	498	529	77	98	113	175	5	....	...	....	...	650
	Spring	185	353	668	804	456	706	876	694	43	S. 32 24 W.	.15	S. $26\frac{1}{2}$ W.	.08	1625
	Summer	175	186	259	406	279	517	1481	970	6	N. 88 7 W.	$.43\frac{1}{2}$	N. 80 W.	.40	1501
	Autumn	232	458	672	815	243	395	867	583	15	S. 5 57 E.	.03	N. 61 E.	$.05\frac{1}{2}$	1548
	Winter	311	550	1392	1362	254	348	381	495	67	S. 76 50 E.	.35	S. $86\frac{1}{2}$ E.	$.38\frac{1}{2}$	1745
	The year[4]	...	...	...	...	...	...	...	...	...	S. 36 50 W.	.07	....	...	6419
22. Southeastern Washington.[2]	January	30	81	17	198	116	311	34	134	12					
	February	30	44	10	184	139	322	24	69	12					
	March	14	55	13	163	131	274	27	63	0					
	April	16	48	8	185	100	387	31	78	0					
	May	29	43	13	182	92	297	53	132	0					
	June	24	54	24	157	130	296	50	58	0					
	July	17	54	27	154	89	265	58	77	0					
	August	34	50	9	143	80	321	47	58	0					
	September	40	47	43	135	92	322	35	48	6					
	October	28	55	27	200	98	275	58	79	0					
	November	27	58	24	181	105	239	50	113	0					
	December	33	80	16	199	84	289	28	78	2					
	Spring	59	146	34	530	323	958	111	273	0	S. 24 43 W.	.46	S. $46\frac{1}{2}$ W.	.04	
	Summer	75	158	60	454	299	882	155	193	0	S. 24 39 W.	$.44\frac{1}{2}$	S. $63\frac{1}{2}$ W.	.03	
	Autumn	95	160	94	516	295	836	143	240	6	S. 20 48 W.	.39	N. $44\frac{1}{2}$ E.	$.03\frac{1}{2}$	
	Winter	93	205	43	581	339	922	86	281	26	S. 19 18 W.	.40	N. 62 E.	$.03\frac{1}{2}$	
	The year[4]	...	...	...	...	...	...	...	...	...	S. 22 34 W.	.42			
23. Northeastern Washington.[3]	January	96	42	72	145	106	27	105	117	...	....	...	....	...	248
	February	65	27	50	111	123	53	72	105	...	....	...	....	...	227
	March	42	24	98	128	99	43	91	62	...	....	...	....	...	217
	April	41	15	82	113	136	58	102	72	...	....	...	....	...	210
	May	38	18	105	125	125	28	114	54	...	....	...	....	...	217
	June	33	56	48	121	157	22	94	83	...	....	...	....	...	210
	July	42	11	61	185	111	42	80	104	...	....	...	....	...	217
	August	53	31	60	187	119	50	88	129	...	....	...	....	...	248
	September	50	37	102	135	61	36	77	102	...	....	...	....	...	210
	October	48	40	101	149	101	52	41	101	...	....	...	....	...	248
	November	60	60	83	144	93	55	94	104	...	....	...	....	...	240
	December	104	62	74	100	85	112	77	103	...	....	...	....	...	248
	Spring	121	57	285	366	360	129	307	188	...	S. 7 15 E.	.23	S. 5 E.	.09	644
	Summer	128	98	169	493	387	114	262	316	...	S. 3 13 E.	.20	S. $9\frac{1}{2}$ W.	$.05\frac{1}{2}$	675
	Autumn	158	137	286	428	255	143	212	307	...	S. 39 45 E.	$.12\frac{1}{2}$	N. 49 E.	.08	698
	Winter	265	131	196	356	314	192	254	325	...	S. 34 47 W.	.07	N. 34 W.	.11	723
	The year[4]	...	...	...	...	...	...	...	...	...	S. 7 55 E.	.15	....	...	2740

[1] Formerly Columbia Barracks. [2] Fort Walla-walla. [3] Fort Colville.

[4] Computed from the resultants for the seasons.

(Nos. 24 to 31.) **Oregon,** north of latitude 45°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Astoria,	U. S. Army Surgeons,	1	2	August, 1850, to September, 1851, inclusive.
Fort Cascades,	" " "	3	1	1858 to 1861 inclusive.
Fort Dalles,	" " "	12	8	1850 to 1866 inclusive.
Fort Stevens,	" " "	2	5	1864 to 1869 inclusive.
Fort Yamhill,	" " "	9	5	1856 to 1866 inclusive.
Oregon City,	" " "	3	0	1849, 1850 and 1851.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
24. Fort Stevens.	January	2	43	72	94	9	34	15	10	...	....	...	....	...	93
	February	0	27	67	39	23	65	27	8	...	....	...	....	...	85
	March	5	36	62	29	28	71	30	18	...	....	...	....	...	93
	April	4	15	49	67	16	119	42	48	...	....	...	....	...	120
	May	6	8	27	23	5	189	63	51	...	....	...	....	...	124
	June	0	5	7	23	5	147	14	69	...	....	...	....	...	90
	July	1	4	10	9	11	86	23	42	...	....	...	....	...	62
	August	5	8	9	2	6	78	31	46	...	....	...	....	...	62
	September	2	10	25	26	36	96	39	36	...	....	...	....	...	90
	October	1	22	12	14	4	23	10	7	...	....	...	....	...	31
	November	1	47	31	25	3	47	0	11	...	....	...	....	...	60
	December	1	50	18	57	8	41	1	10	...	....	...	....	...	62
	Spring	15	59	138	119	49	379	135	117	...	S. 40° 17′ W.	.34	S. 71° W.	.10	337
	Summer	6	17	26	34	22	311	68	157	...	S. 67 53 W.	.57	N. 88 W.	.40	214
	Autumn	4	79	68	65	43	166	49	54	...	S. 17 47 W.	.21½	N. 80 E.	.07	181
	Winter	3	120	157	190	40	140	43	28	...	S. 52 19 E.	.38	S. 89½ E.	.43	240
	The year[1]	...	...	...	...	...	...	...	...	...	S. 29 30 W.	.26	....	...	972
25. Astoria.[2] No. of observat'ns.	Spring	1	27	61	23	1	108	39	81	...	S. 77 58 W.	.23	N. 88½ W.	.07	92
	Summer	10	8	30	7	22	150	96	146	...	S. 86 57 W.	.57½	N. 87 W.	.42	123
	Autumn	8	14	150	18	13	119	102	20	...	S. 19 34 W.	.18½	S. 36 E.	.15	121
	Winter	0	26	163	15	2	51	28	64	...	N. 79 44 E.	.24	N. 76½ E.	.40	90
	The year[1]	...	...	...	...	...	...	...	...	...	S. 71 6 W.	.16	....	...	426
No. of miles.	Spring	24	282	1663	977	2687	2991	2955	3194	...	S. 57 46 W.	.38	S. 22 W.	.06	
	Summer	0	216	63	60	39	1170	2984	9524	...	N. 59 51 W.	.85	N. 37 W.	.72	
	Autumn	0	1391	476	501	4369	3218	717	1239	...	S. 21 48 W.	.46½	S. 24 E.	.31	
	Winter	144	2612	3066	1138	6252	3082	2494	91	...	S. 7 47 E.	.38½	S. 56 E.	.42	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 62 6 W.	.33			
26. Fort Yamhill.	January	6	46	131	135	64	188	49	70	82					
	February	5	68	82	118	35	232	31	75	57					
	March	15	45	71	122	35	266	68	125	71					
	April	10	57	53	60	35	210	164	139	57					
	May	8	17	28	47	21	232	200	113	63					
	June	4	1	18	16	30	208	215	153	55					
	July	6	4	9	5	24	311	217	111	43					
	August	2	10	6	5	10	193	262	150	63					
	September	11	12	24	24	18	151	169	115	91					
	October	17	59	54	82	24	202	105	78	143					
	November	9	34	116	127	46	141	64	49	111					
	December	19	55	128	155	58	193	68	48	77					
	Spring	33	119	152	229	91	708	432	377	191	S. 65 13 W.	.38	N. 67 W.	.05	
	Summer	12	15	33	26	64	712	694	414	161	S. 79 15 W.	.68	N. 82 W.	.36	
	Autumn	37	105	194	233	88	495	338	242	345	S. 53 4 W.	.26	N. 78 E.	.10	
	Winter	30	169	341	408	157	613	148	193	216	S. 3 0 E.	.26	S. 75½ E.	.33	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 59 48 W.	.35			
27. Oregon City.	Spring	144	13	11	4	240	13	2	9	...	S. 3 23 E.	.21	S. 15½ W.	.11½	
	Summer	198	6	5	1	146	8	0	6	...	N. 0 3 E.	.14½	N. 10½ W.	.24	
	Autumn	147	7	10	5	217	2	1	2	...	S. 12 4 E.	.18	S. 4 W.	.08	
	Winter	128	57	14	16	218	9	0	6	...	S. 41 4 E.	.19	S. 59½ E.	.09	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 24 29 E.	.10½			

[1] Computed from the resultants for the seasons.

[2] The number of observations and the number of miles here given are from different sources; the former being as given on the top of this page; but the time and date of the latter being not preserved.

(Nos. 24 to 31.) **Oregon.**—*Continued.*

Place of observation	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
28. Northwestern Oregon.[1]	Spring	193	218	362	375	381	1208	608	584	191	S. 55° 55′ W.	.31	S. 82° W.	.04
	Summer	226	46	94	68	254	1181	858	723	161	S. 79 44 W.	.57	N. 79½ W.	.35
	Autumn	196	205	422	321	361	782	490	318	345	S. 39 29 W.	.22	S. 85 E.	.07
	Winter	161	372	675	629	417	813	219	291	216	S. 25 24 E.	.24	S. 80 E.	.32
	The year[3]	...	...	...	...	...	...	...	...	...	S. 52 31 W.	.27		
29. Fort Cascades.	January	11	25	31	17	25	24	14	3					
	February	26	16	18	7	36	11	16	5					
	March	22	14	15	20	43	21	19	1					
	April	6	7	15	11	23	63	22	3					
	May	0	8	8	10	27	102	72	11					
	June	10	3	4	20	51	81	36	5					
	July	2	0	0	1	36	114	60	4					
	August	2	9	4	8	65	84	42	3					
	September	13	13	13	16	37	94	16	8					
	October	5	38	16	12	19	81	21	25					
	November	16	54	54	13	8	37	15	13					
	December	9	72	50	16	35	27	3	5					
	Spring	28	29	38	41	93	186	113	15	...	S. 40 46 W.	.47	S. 63½ W.	.17
	Summer	14	12	8	29	152	279	138	12	...	S. 42 10 W.	.71	S. 52 W.	.41
	Autumn	34	105	83	41	64	212	52	46	...	S. 25 16 W.	.18	N. 35 E.	.14
	Winter	46	113	99	40	96	62	33	13	...	S. 74 45 E.	.25	N. 62 E.	.45
	The year[3]	...	...	...	...	...	...	...	...	...	S. 29 11 W.	.32		
30. Fort Dalles.	Spring	79	331	167	88	118	1022	936	510	27	S. 81 37 W.	.48	N. 83 W.	.05
	Summer	95	322	188	112	58	832	1074	732	42	N. 86 6 W.	.49	N. 28 W.	.13
	Autumn	86	402	176	157	123	1377	992	552	42	S. 75 56 W.	.47	S. 40 W.	.05
	Winter	113	552	258	257	283	1417	646	468	36	S. 61 10 W.	.32½	S. 60½ E.	.37
	The year[3]	...	...	...	...	...	...	...	...	...	S. 79 44 W.	.43		
31. Northern Oregon.[2]	Spring	107	360	205	129	211	1208	1049	525	...	S. 76 12 W.	.47	S. 87 W.	.06
	Summer	109	334	196	141	210	1111	1212	744	...	S. 83 35 W.	.49½	N. 32 W.	.11
	Autumn	120	507	259	198	187	1589	1044	598	...	S. 73 19 W.	.42½	S. 40½ W.	.02
	Winter	159	665	357	297	379	1479	679	481	...	S. 57 4 W.	.27	S. 61 E.	.18
	The year[3]	...	...	...	...	...	...	...	...	...	S. 74 33 W.	.41		

[1] Astoria, Forts Stevens and Yamhill, and Oregon City. For observations at Oregon City see Army Met. Reg.
[2] Forts Cascades and Dalles. [3] Computed from the resultants for the seasons.

(No. 32.) **Northern Idaho.**

Observed at Fort Lapwai, by U. S. Army Surgeons, for an aggregate period of 3½ years, in the years 1864 to 1869 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
32. Fort Lapwai.	January	22	25	12	19	8	27	62	30	...	....	...	....	...	124
	February	27	31	25	22	19	47	50	17	...	....	...	....	...	142
	March	53	25	6	9	45	45	78	29	...	....	...	....	...	186
	April	36	28	17	11	17	26	64	25	...	....	...	....	...	150
	May	58	28	12	4	9	9	62	37	...	....	...	....	...	155
	June	64	21	9	2	16	8	51	63	...	....	...	....	...	120
	July	61	11	7	0	6	18	25	45	...	....	...	....	...	124
	August	62	8	5	3	3	17	23	18	...	....	...	....	...	124
	September	28	1	5	4	11	11	23	29	...	....	...	....	...	90
	October	58	0	0	1	32	18	48	18	...	....	...	....	...	155
	November	21	86	23	10	20	26	25	23	...	....	...	....	...	120
	December	23	25	19	5	11	45	83	16	...	....	...	....	...	155
	Spring	147	81	35	24	71	80	204	91	...	N. 60° 5′ W.	.34	S. 40° W.	.05½	491
	Summer	187	40	21	5	25	43	99	126	...	N. 34 1 W.	.54	N. 11 W.	.24	368
	Autumn	107	87	28	15	63	55	96	70	...	N. 38 37 W.	.26	S. 85 E.	.09½	365
	Winter	72	81	56	46	38	119	195	63	...	N. 83 51 W.	.27	S. 5 W.	.18½	421
	The year[1]	...	...	...	...	...	...	...	...	...	N. 50 15 W.	.33	....	...	1645

[1] Computed from the resultants for the seasons.

(Nos. 33 to 37.) **Montana.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date and remarks.
Camp Cook,	U. S. Army Surgeons,	2	11	1866 to 1869 inclusive.
Deer Lodge City,	Granville Stuart,	1	0	1869.
Fort Benton,	M. C. Rosseau,	0	8	Last three months of the year 1862, and the first five of 1869.
Fort Ellis,	U. S. Army Surgeons,	1	5	1868 and 1869.
Fort C. F. Smith,	" " "	1	9	1866, 1867 and 1868.
Fort Shaw,	" " "	2	4	1867, 1868 and 1869.
Helena City,	A. C. Wheaton,	1	7	1866, 1867 and 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
33. Western Montana.[1]	Spring	83	35	5	24	49	53	55	73	267	N. 60° 8′ W.	.17½	N. 47½° E.	.15	246
	Summer	19	17	6	1	19	32	124	64	340	N. 78 55 W.	.28	N. 11 W.	.07	184
	Autumn	23	19	10	4	25	114	104	52	214	S. 79 46 W.	.35	S. 60 W.	.10	182
	Winter	32	35	11	14	114	273	95	124	571	S. 62 24 W.	.29½	S. 1½ W.	.11	330
	The year	...	...	...	...	...	...	...	...	...	S. 86 54 W.	.26			
34. Fort Shaw.	January	6	16	3	3	24	36	86	12	...	....	...	....	...	62
	February	12	14	7	4	15	29	81	9	...	....	...	....	...	57
	March	15	6	5	1	10	17	126	6	...	....	...	....	...	62
	April	18	7	7	4	9	23	108	4	...	....	...	....	...	60
	May	14	10	17	7	7	17	99	15	...	....	...	....	...	62
	June	11	2	19	0	2	13	118	15	...	....	...	....	...	60
	July	13	5	8	1	13	13	122	11	...	....	...	....	...	62
	August	39	7	12	2	15	13	68	30	...	....	...	....	...	62
	September	29	10	12	7	17	27	125	43	...	....	...	....	...	90
	October	22	5	4	0	20	47	155	26	...	....	...	....	...	93
	November	15	15	12	4	30	41	140	11	...	....	...	....	...	90
	December	17	6	6	2	19	46	175	56	...	....	...	....	...	93
	Spring	47	23	29	12	26	57	333	25	...	N. 88 57 W.	.61	S. 1° 5′ W.	.00	184
	Summer	63	14	39	3	30	39	308	56	...	N. 80 45 W.	.59½	N. 15½° E.	.08	184
	Autumn	66	30	28	11	67	115	420	80	...	S. 88 36 W.	.61½	S. 8½ W.	.03	273
	Winter	35	36	16	9	58	111	342	77	...	S. 86 15 W.	.62½	S. 12½ W.	.06	212
	The year[2]	...	...	...	...	...	...	...	...	...	N. 88 48 W.	.61	....	...	853
35. Camp Cook.	January	69	25	3	10	16	18	12	33	...	....	...	....	...	62
	February	63	20	15	18	6	14	27	92	...	....	...	....	...	85
	March	31	15	13	40	15	22	56	87	...	....	...	....	...	93
	April	18	27	11	50	17	35	64	48	...	....	...	....	...	90
	May	26	14	13	46	12	8	39	28	...	....	...	....	...	62
	June	36	10	10	28	5	11	40	40	...	....	...	....	...	60
	July	65	21	8	34	18	19	65	49	...	....	...	....	...	93
	August	64	28	29	45	21	11	49	32	...	....	...	....	...	93
	September	91	28	33	35	13	19	76	65	...	....	...	....	...	120
	October	72	17	4	12	18	22	50	84	...	....	...	....	...	93
	November	74	7	4	22	20	8	34	101	...	....	...	....	...	90
	December	129	25	6	9	12	11	25	61	...	....	...	....	...	93
	Spring	75	56	37	136	44	65	159	163	...	N. 73 29 W.	.21	S. 2 W.	.21	245
	Summer	165	59	47	107	44	41	154	121	...	N. 35 57 W.	.24	S. 36 E.	.09½	246
	Autumn	237	52	41	69	51	49	160	250	...	N. 37 46 W.	.44	N. 44 W.	.10	303
	Winter	261	70	24	37	34	43	64	186	...	N. 19 46 W.	.52	N. 5 E.	.21	240
	The year[2]	...	...	...	...	...	...	...	...	...	N. 35 50 W.	.33½	....	...	1034

[1] Deer Lodge City and Helena City, surface winds and motion of clouds combined.

[2] Computed from the resultants for the seasons.

(Nos. 33 to 37.) **Montana.**—*Continued.*

Kind of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.	Number of days.
36. Northwestern Montana.[1] Surface wind.	Spring	138	108	146	160	121	168	527	195	0	S. 89° 55′ W.	.29	S. 61° E.	.07	429
	Summer	228	73	86	110	74	80	462	177	0	S. 65 27 W.	.36½	S. 5½ E.	.18	430
	Autumn	314	91	103	97	123	200	625	257	9	N. 72 19 W.	.41	N. 22½ W.	.10	637
	Winter	336	112	47	49	163	216	460	286	1	N. 67 48 W.	.42½	N. 18 W.	.13	483
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 38 W.	.35	....	...	1979
Motion of clouds.	Spring	47	36	33	46	31	73	128	50	...	S. 86 37 W.	.28	S. 3 W.	.16	184
	Summer	68	25	22	43	9	15	98	41	...	N. 46 14 W.	.28½	N. 47½ E.	.09	184
	Autumn	32	16	9	2	3	22	45	9	...	N. 57 0 W.	.39	N. 36½ W.	.09	121
	Winter	76	22	19	17	27	41	77	39	...	N. 59 32 W.	.32	N. 10½ W.	.03	146
	The year[3]	...	...	...	...	...	...	...	...	...	N. 62 56 W.	.30½	....	...	635
The two combined.	Spring	185	144	179	206	152	241	655	245	0	S. 89 12 W.	.28½	S. 25 E.	.13	429
	Summer	296	98	108	153	83	95	560	218	0	N. 62 14 W.	.35	N. 30 E.	.06	430
	Autumn	346	107	112	99	126	222	670	266	9	N. 71 18 W.	.41	N. 69 W.	.05	637
	Winter	412	134	66	66	190	257	537	325	1	N. 66 46 W.	.41	N. 37 W.	.06	483
	The year[3]	...	...	...	...	...	...	...	...	...	N. 71 38 W.	.36	....	...	1979
37. Southern Montana.[2] Surface wind.	January	12	12	10	11	7	36	82	28	0	....	...	....	...	93
	February	11	27	16	5	15	44	61	20	3	....	...	....	...	85
	March	8	36	41	6	14	20	63	19	0	....	...	....	...	93
	April	12	6	33	20	6	17	55	38	0	....	...	....	...	90
	May	6	13	49	25	11	8	75	31	0	....	...	....	...	93
	June	7	27	35	21	7	16	36	28	0	....	...	....	...	90
	July	16	4	33	13	9	10	50	12	0	....	...	....	...	62
	August	9	14	62	21	7	40	42	18	0	....	...	....	...	93
	September	6	16	60	35	11	18	66	51	0	....	...	....	...	120
	October	7	38	48	27	7	38	49	58	0	....	...	....	...	124
	November	18	28	35	29	4	24	86	63	0	....	...	....	...	120
	December	19	38	38	34	8	66	66	60	0	....	...	....	...	124
	Spring	26	55	123	51	31	45	193	88	0	N. 72 25 W.	.15	N. 47 E.	.02	276
	Summer	32	45	130	55	23	66	128	58	0	S. 78 3 W.	.02½	S. 74 E.	.13	245
	Autumn	31	82	143	91	22	80	201	172	0	N. 59 16 W.	.16	N. 22½ E.	.05	364
	Winter	42	77	64	50	30	146	209	108	0	N. 88 58 W.	.32	S. 81 W.	.16½	302
	The year[3]	...	...	...	...	...	...	...	...	...	N. 78 34 W.	.16	....	...	1187
Motion of clouds.	Spring	3	0	30	6	0	5	139	13	...	N. 87 51 W.	.60	S. 77 W.	.07	92
	Summer	3	6	21	6	0	3	103	6	...	N. 86 20 W.	.54	S. 74 W.	.01½	92
	Autumn	5	4	16	3	6	11	64	8	...	S. 87 33 W.	.48½	S. 32 E.	.07	91
	Winter	44	10	13	6	10	29	103	17	...	N. 75 42 W.	.49½	N. 33 E.	.10	90
	The year	55	20	80	21	16	48	409	44	...	N. 85 40 W.	.53	....	...	365
The two combined.	Spring	29	55	153	57	31	50	332	101	...	N. 81 1 W.	.26	N. 80½ W.	.04½	276
	Summer	25	51	151	61	23	69	231	64	...	S. 84 49 W.	.14	S. 54 E.	.07½	245
	Autumn	36	86	159	94	28	91	265	180	...	N. 69 2 W.	.19½	N. 25½ E.	.04	364
	Winter	86	87	77	56	40	175	212	125	...	N. 82 27 W.	.29	S. 79 W.	.02	302
	The year[3]	...	...	...	...	...	...	...	...	...	N. 81 8 W.	.20½	....	...	1187

[1] Camp Cook and Forts Benton and Shaw. [2] Forts Ellis and C. F. Smith.
[3] Computed from the resultants for the seasons.

(Nos. 38 to 40.) **Dacotah,** north of latitude 45°.
Observed at the following military posts, by U. S. Army Surgeons, viz.:—

Place of observation.	Aggregate length of time. years.	months.	Date.
Fort Abercrombie,	8	10	1856 to 1869 inclusive.
Fort Berthold,	1	8	1866, 1867 and 1869.
Fort Buford,[1]	3	2	1866 to 1869 inclusive.
Fort Ransom,	1	1	December, 1868, to December, 1869, inclusive.
Fort Rice,	1	4	1868 and 1869.
Fort Stevenson,	1	6	1867, 1868 and 1869.
Fort Wadsworth,	2	4	1866, 1867 and 1869.
Fort Totten,	0	5	August to December, 1869.

[1] Formerly Fort Union.

(Nos. 38 to 40.) **Dacotah.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
38. Northwestern Dacotah.[1]	January	33	8	47	23	28	36	86	46	...	....	...	....	...	93
	February	32	21	48	33	19	20	89	34	...	....	...	....	...	85
	March	21	19	38	41	41	31	39	69	...	....	...	....	...	93
	April	16	21	34	49	59	16	38	75	...	....	...	....	...	90
	May	28	38	49	37	53	9	23	60	...	....	...	....	...	93
	June	18	21	17	46	50	20	32	65	...	....	...	....	...	90
	July	12	37	27	31	40	17	38	44	...	....	...	....	...	62
	August	16	25	73	62	25	14	41	68	...	....	...	....	...	93
	September	48	44	47	40	23	10	44	80	...	....	...	....	...	120
	October	32	25	33	39	52	26	53	112	...	....	...	....	...	124
	November	24	33	50	21	57	32	57	72	...	....	..	....	...	90
	December	41	28	58	56	34	43	59	95	...	....	...	....	...	124
	Spring	65	78	121	127	153	56	100	204	...	S. 44° 49′ W.	.03	S. 41° E.	.06½	276
	Summer	46	83	117	139	115	51	111	177	...	S. 5 16 E.	.02	S. 55 E.	.08	245
	Autumn	104	102	130	100	132	68	154	264	...	N. 36 11 W.	.13	N. 11 W.	.08	334
	Winter	106	57	153	112	81	99	234	175	...	N. 75 37 W.	.16	N. 71 W.	.09	302
	The year[4]	...	...	...	...	...	...	...	...	...	N. 67 23 W.	.07	....	...	1157
39. Northern Central Dacotah.[2]	January	23	27	46	26	60	11	66	45	0	....	...	....	...	93
	February	52	27	56	19	42	4	89	43	38	....	...	....	...	113
	March	40	21	23	22	54	41	98	58	4	....	...	....	...	124
	April	66	27	22	26	47	16	64	86	53	....	...	....	...	120
	May	49	36	11	14	43	21	39	18	79	....	...	....	...	93
	June	12	13	15	13	97	12	75	16	12	....	...	....	...	90
	July	40	15	54	39	75	21	52	62	55	....	...	....	...	124
	August	41	42	53	92	86	41	78	42	37	....	...	....	...	124
	September	53	53	36	63	70	55	111	94	43	....	...	....	...	150
	October	109	36	30	31	52	77	140	184	71	....	...	....	...	186
	November	95	57	65	66	89	65	152	103	47	....	...	....	...	180
	December	54	47	51	38	119	68	165	117	57	....	...	....	...	186
	Spring	155	84	56	62	144	78	201	162	136	N. 67 53 W.	.21	N. 23 W.	.08	337
	Summer	93	70	122	144	258	74	205	120	104	S. 20 26 W.	.17	S. 32 E.	.19	338
	Autumn	257	146	131	160	211	197	403	381	161	N. 70 19 W.	.24	N. 39 W.	.10	516
	Winter	129	101	153	83	221	83	320	205	95	N. 88 20 W.	.17½	N. 59 W.	.01	392
	The year[4]	...	...	...	...	...	...	...	...	...	N. 89 13 W.	.16	....	...	1583
40. Eastern Dacotah.[3] Surface winds.	January	62	82	43	187	55	196	97	349	2	....	...	....	...	372
	February	96	92	35	201	108	117	99	321	4	....	...	....	...	366
	March	131	107	67	191	99	112	114	337	9	....	...	....	...	403
	April	125	140	73	152	76	117	67	286	10	....	...	....	...	360
	May	130	125	74	236	72	107	54	267	3	....	...	....	...	372
	June	92	93	52	205	62	94	62	213	2	....	...	....	...	300
	July	68	89	51	237	71	99	70	248	6	....	...	....	...	341
	August	83	130	67	309	58	88	42	194	7	....	...	....	...	341
	September	125	130	85	257	107	116	80	261	22	....	...	....	...	420
	October	129	94	52	216	74	149	88	437	6	....	...	....	...	434
	November	150	85	48	209	96	155	95	378	5	....	...	....	...	420
	December	139	69	42	189	99	178	100	336	10	....	...	....	...	372
	Spring	386	372	214	579	247	336	235	890	22	N. 29 16 W.	.13½	N. 24 E.	.06	1135
	Summer	243	312	170	751	191	281	174	655	15	N. 85 59 E.	.03	S. 62 E.	.13½	982
	Autumn	404	309	185	682	277	420	263	1076	33	N. 53 4 W.	.15	N. 55 W.	.04	1274
	Winter	297	243	120	577	262	491	296	1006	16	N. 76 1 W.	.20¼	S. 82 W.	.11	1110
	The year[4]	...	...	...	...	...	...	...	...	...	N. 53 46 W.	.11	....	...	4501
Motion of clouds.	Spring	71	103	28	88	42	79	62	160	...	N. 35 3 W.	.19	N. 72½ E.	.13½	276
	Summer	67	59	29	98	40	89	71	184	...	N. 61 46 W.	.22	S. 75 E.	.05	276
	Autumn	55	24	20	80	30	71	51	204	...	N. 62 24 W.	.32	N. 55½ W.	.06	273
	Winter	42	27	8	37	44	97	46	145	...	N. 81 21 W.	.37	S. 65 W.	.14	208
	The year[4]	...	...	...	...	...	...	...	...	...	N. 64 5 W.	.26½	....	...	1033
The two combined.	Spring	457	475	242	667	289	415	297	1050	22	N. 30 30 W.	.14	N. 38½ E.	.06½	1135
	Summer	310	371	199	849	231	370	245	839	15	N. 49 31 W.	.01½	S. 59 E.	.11	982
	Autumn	459	333	205	762	307	491	314	1280	33	N. 55 18 W.	.17	N. 45½ W.	.04	1274
	Winter	339	270	128	614	306	588	342	1151	16	N. 77 5 W.	.22½	S. 79½ W.	.11	1110
	The year[4]	...	...	...	...	...	...	...	...	...	N. 57 41 W.	.13	....	...	4501

[1] Fort Buford, surface winds and motion of clouds combined.
[2] Forts Berthold, Rice, Stevenson, and Totten, surface winds and motion of clouds combined.
[3] Forts Abercrombie, Ransom, and Wadsworth.
[4] Computed from the resultants for the seasons.

(Nos. 41 and 42.) **Northwestern Minnesota.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Pembina,	Charles Cavileer,	0	9	1851, 1852 and 1853.
Red Lake,	Rev. E. W. Carver,	1	3	1853 and 1854.
St. Joseph's,	O. A. Kellum,	0	11	1854 and 1855.
White Earth Reservation,	D. Pyle,	0	4	1869.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
41. Surface wind in 1854 and 1855.[1] No. of observations.	Red Lake	Winter	11	6	9	10	55	18	26	22	...	S. 37° 41′ W.	.361			
	St. Joseph	Spring	73	28	34	6	74	?	26	4	...	N. 59 14 E.	.124			
		Summer	19	4	21	3	98	1	53	13	...	S. 27 54 W.	.306			
		Winter	129	12	16	11	76	20	52	65	...	N. 43 2 W.	.277			
No. of miles.	Red Lake	Winter	118	18	64	58	434	98	190	245	...	S. 52 38 W.				
	St. Joseph	Spring	724	225	216	16	698	?	331	35	...	N. 8 47 E.	.09			
		Summer	119	30	115	43	690	4	474	194	...	S. 45 6 W.	.38			
		Winter	1601	118	77	40	510	66	534	578	...	N. 35 22 W.	.49			
Mean velocity in miles per hour.	Red Lake	Winter	10.73	3.00	7.11	5.80	7.89	5.44	7.31	11.13	...					
	St. Joseph	Spring	9.92	8.04	6.35	2.67	9.43	?	12.73	8.75	...					
		Summer	6.26	7.50	5.48	14.33	7.04	4.00	8.94	14.92	...					
		Winter	12.41	9.83	4.81	3.64	6.71	3.30	10.27	8.89	...					
42. Aggregate number of observations at all the stations.	Surface wind.	Spring	100	76	58	24	140	28	64	70	95	N. 9 50 W.	.04	N. 49° E.	.14½	
		Summer	60	12	42	16	172	27	96	28	60	S. 32 38 W.	.26½	S. 10 W.	.17	
		Autumn	77	44	23	47	121	31	43	97	16	N. 89 19 W.	.09	N. 18 E.	.06	
		Winter	168	21	35	33	251	50	127	135	76	S. 80 21 W.	.21	N. 79 W.	.09	
		The year[2]	...	...	...	...	...	...	...	...	...	S. 64 22 W.	.12½			
	Motion of clouds.	Summer	4	0	0	1	3	6	3	2	0	S. 72 17 W.	.44	....	...	31
		Autumn	30	13	3	14	15	16	14	62	0	N. 45 10 W.	.40	....	...	91
		Winter	50	9	24	17	22	9	17	35	0	N. 8 1 W.	.22½	....	...	180
	The two preceding combined.	Spring	100	76	58	24	140	28	64	70	95	N. 9 50 W.	.04	N. 59 E.	.13	
		Summer	64	12	42	17	175	33	99	30	60	S. 34 47 W.	.26½	S. 6 W.	.20	
		Autumn	107	57	26	61	136	47	57	159	16	N. 63 5 W.	.16	N. 15 W.	.10	
		Winter	218	30	59	50	273	59	144	170	76	N. 87 11 W.	.17½	N. 58 W.	.07	
		The year[2]	...	...	...	...	...	...	...	...	...	S. 78 14 W.	.12			

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Winter.
Average velocity of all winds at Red Lake in miles per hour	....	....	7.95
Velocity in mean direction on the supposition that the winds from all points of the compass move with the foregoing average velocity	....	....	2.87
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	....	....	2.57
Excess of the latter over the former	....	....	-0.30
Average velocity of all winds at St. Joseph in miles per hour	9.16	7.87	9.04
Velocity in mean direction on the supposition that the winds from all points of the compass move with the foregoing average velocity	1.14	2.41	2.50
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	0.73	2.45	3.27
Excess of the latter over the former	—0.41	+0.04	+0.77

[2] Computed from the resultants for the seasons.

(Nos. 43 and 44.) **Western Minnesota.**

Observed at the following places, viz.:—

Hazlewood (formerly Lac qui Parle), by Mr. Williamson and Rev. S. R. Riggs, for an aggregate period of $4\frac{2}{3}$ years, in the years 1844 and 1854 to 1869 inclusive.

Lapham, by E. M. Wright, J. F. McMullin, S. Locke, and D. F. Shortwell, for an aggregate period of ten months, in the years 1857 and 1858.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
43. Surface wind at Hazlewood[1] in the years 1854 to 1857. No. of observations.	Spring	66	22	28	58	136	59	42	249	...	N. 77° 29′ W.	.271	N. 34° E.	.03
	Summer	18	7	11	57	166	29	17	209	...	S. 66 31 W.	.273	S. 14 E.	.14
	Autumn	21	14	12	28	131	26	37	198	..	N. 89 22 W.	.325	S. 60 W.	.06
	Winter	50	16	27	26	85	21	35	202	...	N. 57 43 W.	.343	N. 2 W.	.15
	The year[2]	...	...	...	...	...	...	...	...	...	N. 83 6 W.	.285		
No. of miles.	Spring	719	126	232	409	888	363	235	1496	...	N. 65 18 W.	.23		
	Summer	76	20	82	344	884	212	80	959	...	S. 48 10 W.	.29		
	Autumn	113	62	52	117	559	104	150	900	...	N. 83 28 W.	.33		
	Winter	221	72	80	98	378	62	169	1226	...	N. 53 38 W.	.47		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 16 W.	.28		
Mean velocity in miles p'r hour.	Spring	10.89	5.73	8.29	7.05	6.53	6.15	5.60	6.01					
	Summer	4.22	2.43	7.45	6.04	5.33	7.31	4.71	4.59					
	Autumn	5.38	4.43	4.33	4.18	4.27	4.00	4.05	4.55					
	Winter	4.42	4.50	2.96	3.77	4.45	2.95	4.83	6.07					
44. Aggregate number of observations at all the stations. Surface wind.	Spring	176	94	116	233	340	133	127	550	3	N. 82 55 W.	.15	N. 68 E.	.07
	Summer	57	42	75	203	447	126	107	502	6	S. 51 51 W.	.25	S. $7\frac{1}{2}$ E.	.15
	Autumn	79	42	45	143	308	62	77	435	8	S. 81 44 W.	.21	S. $20\frac{1}{2}$ E.	02
	Winter	153	57	96	111	271	107	206	623	7	N. 67 39 W.	.34	N. 35 W.	.17
	The year[2]	...	...	...	...	...	...	...	...	...	S. 87 33 W.	$.21\frac{1}{2}$		
Motion of clouds.	Spring	39	38	85	58	71	23	90	78	...	S. 49 39 W.	.02	S. 72 E.	$.06\frac{1}{2}$
	Summer	33	18	47	49	59	55	135	61	...	S. 70 24 W.	$.28\frac{1}{2}$	S. $61\frac{1}{2}$ W.	$.21\frac{1}{2}$
	Autumn	40	32	68	36	56	8	66	51	...	N. 35 50 E.	.04	N. 76 E.	$.10\frac{1}{2}$
	Winter	26	22	84	23	36	5	82	72	...	N. 29 22 W.	.12	N. 11 E.	.10
	The year[2]	...	...	...	...	...	...	...	...	...	N. 85 23 W.	.08		
Two preceding combined.	Spring	215	132	201	291	411	156	217	628	3	N. 86 40 W.	.12	N. $79\frac{1}{2}$ E.	.07
	Summer	90	60	122	252	506	181	242	563	6	S. 56 37 W.	.25	S. 9 W.	.08
	Autumn	119	74	113	179	364	70	143	486	8	S. 84 8 W.	.16	S. 71 E.	.03
	Winter	179	79	180	134	307	112	288	695	7	N. 65 5 W.	$.29\frac{1}{2}$	N. 31 W.	.15
	The year[2]	...	...	...	..	...	...	...	...	...	S. 88 33 W.	.19		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.77	5.17	4.40	4.99	5.33
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.83	1.41	1.43	1.71	1.52
True velocity in mean direction, giving the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.56	1.48	1.45	2.33	1.49
Excess of the latter over the former	—.27	+.07	+.02	+.62	—.03

[2] Computed from the resultants for the seasons.

. (Nos. 45 to 47.)

Central Minnesota.

Observed as follows :—

Name of station.	By whom observed.	Aggregate length of time. yrs.	mos	Date.
Forest City,	A. C. and H. L. Smith,	5	3	1859 to 1866 inclusive.
Fort Ripley,	U. S. Army Surgeons,	18	3	1849 to 1869 inclusive.
Kandotta,	Edwin Whitefield,	0	2	January and February, 1859.
Koniska,	Thomas M. Young,	0	11	1869.
Princeton,	O. E. Garrison & S. M. Byers,	3	11	1856 to 1860 inclusive.
St. Cloud,	O. E. Garrison,	2	2	1860, 1861, 1862, 1868 and 1869.
Sauk Centre,	S. Bloomfield,	0	6	1868 and 1869.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
45. Fort Ripley.	January	293	171	62	164	413	127	304	255					
	February	284	227	63	185	444	129	226	298					
	March	343	217	88	130	329	99	305	217					
	April	311	270	114	120	250	132	213	182					
	May	349	310	115	169	300	127	191	143					
	June	189	211	83	221	370	136	193	153					
	July	204	158	95	285	391	162	204	148					
	August	234	181	83	249	510	163	241	315					
	September	221	199	73	281	460	190	217	249					
	October	230	187	67	187	380	160	252	267					
	November	262	183	104	189	433	155	327	304					
	December	309	231	94	192	478	187	289	319					
	Spring	1003	797	317	419	879	358	709	542	...	N. 17° 55′ W.	.11	N. 17½°E.	.14
	Summer	627	550	261	755	1271	461	638	616	...	S. 17 37 W.	.14	S. 18 E.	.11
	Autumn	713	569	244	657	1273	505	796	820	...	S. 57 16 W.	.13	S. 37 W.	.05
	Winter	886	629	219	541	1335	443	819	872	...	S. 83 14 W.	.12	N. 70½ W.	.04½
	The year[2]	...	...	...	...	...	...	...	...	...	S. 70 2 W.	.08		
46. Surface wind at Princeton,[1] in the years 1856 and 1857. No. of observations.	Spring	43	17	27	13	23	13	42	36	60	N. 36 2 W.	.177	N. 19 E.	.13
	Summer	32	9	15	23	38	15	39	11	94	S. 46 31 W.	.099	S. 42 E.	.11
	Autumn	36	31	29	38	70	46	71	46	59	S. 56 14 W.	.164	S. 3 E.	.10
	Winter	51	19	13	20	31	30	74	38	41	N. 72 59 W.	.269	N. 62 W.	.13
	The year[2]	...	...	...	...	...	...	...	...	...	N. 83 42 W.	.143		
No. of miles.	Spring	380	147	131	76	186	86	244	493	...	N. 34 27 W.	.29		
	Summer	194	44	63	210	233	120	200	109	...	S. 36 2 W.	.12		
	Autumn	179	210	112	240	492	320	526	518	...	S. 74 28 W.	.23½		
	Winter	305	209	61	195	159	151	492	263	...	N. 61 47 W.	.23½		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 70 53 W.	.18		
Mean velocity in miles per hour.	Spring	8.84	8.65	4.85	5.85	8.09	6.62	5.81	13.69					
	Summer	6.06	4.89	4.20	9.13	6.13	8.00	5.13	9.91					
	Autumn	4.97	6.77	3.86	6.32	7.03	6.96	7.41	11.26					
	Winter	5.98	11	4.69	9.75	5.13	5.03	6.65	6.92					

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.14	6.45	7.08	6.65	7.08
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.44	.64	1.16	1.79	1.01
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	2.35	.74	1.68	1.57	1.26
Excess of the latter over the former	+.91	+.10	+.52	—.22	+.25

[2] Computed from the resultants for the seasons.

(Nos. 45 to 47.) **Central Minnesota.**—*Continued.*

Place of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
47. Aggregate number of observations at all the stations.	Surface wind.	Spring	1449	1171	744	778	1351	541	1250	1228	407	N. 23° 44′ W.	.10½	N. 14° E.	.12
		Summer	901	790	541	1228	1985	812	1094	1173	683	S. 24 57 W.	.14	S. 8 E.	.10½
		Autumn	928	767	476	991	1742	770	1301	1360	637	S. 62 58 W.	.13½	S. 50 W.	.06
		Winter	1291	850	524	847	1828	699	1516	1467	567	N. 89 21 W.	.07	N. 10 E.	.02½
		The year[1]	...	...	...	...	...	...	...	...	...	S. 73 11 W.	.07½		
	Motion of clouds.	Spring	141	84	109	68	89	79	369	161	...	N. 69 22 W.	.31½	N. 28½ E.	.09
		Summer	81	40	52	62	161	151	506	178	...	S. 82 55 W.	.50½	S. 59 W.	.19
		Autumn	101	40	104	62	131	80	278	176	...	N. 85 29 W.	.29	S. 73 E.	.05
		Winter	117	36	135	51	87	50	326	113	...	N. 75 21 W.	.27½	N. 64½ E.	.08
		The year[1]	...	...	...	...	...	...	...	...	...	N. 84 2 W.	.34		
	Two preceding combined.	Spring	1590	1255	853	846	1440	620	1619	1389	407	N. 35 30 W.	.12	N. 20 E.	.14
		Summer	982	830	593	1290	2146	963	1600	1351	683	S. 43 17 W.	.16	S. 5 E.	.18½
		Autumn	1029	807	580	1053	1873	850	1579	1536	637	S. 49 54 W.	.18	S. 13½ W.	.08½
		Winter	1408	886	659	898	1915	749	1842	1580	567	N. 87 22 W.	.15	N. 40 W.	.05
		The year[1]	...	...	...	...	...	...	...	...	...	S. 74 46 W.	.12		

[1] Computed from the resultants for the seasons.

(Nos. 48 to 49.) **Eastern Minnesota.**

Observed at the following places, viz.:—

Itasca, by O. H. Kelley, for an aggregate period of ten months, in the years 1860, 1861 and 1863.

St. Anthony, by C. F. Anderson, during eight months of the year 1854.

Tamarack, by Mary A. Grave, for an aggregate period of ten months in the years 1863 and 1864.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
48. Surface wind at St. Anthony[1] in the year 1854.	No. of observations.	Spring	24	13	14	43	73	6	35	61	6	S. 42° 35′ W.	.15½		
		Summer	16	4	0	19	131	20	48	38	0	S. 32 48 W.	.49		
		Autumn	0	0	0	9	55	22	38	56	0	S. 66 44 W.	.52		
	No. of miles.	Spring	274	155	74	250	584	55	286	821	..	N. 73 13 W.	.23		
		Summer	118	12	0	80	839	91	175	98	...	S. 17 41 W.	.18		
		Autumn	0	0	0	50	412	82	235	481	...	S. 74 33 W.	.49		
	M'n vel'ity in miles per hour.	Spring	11.42	11.92	5.29	5.81	8.00	9.17	8.17	13.46	...				
		Summer	7.37	3.00	?	4.21	6.40	4.55	3.65	2.58	...				
		Autumn	?	?	?	5.56	7.49	3.73	6.18	8.59	...				

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.
Average velocity of all winds in miles per hour	9.09	5.12	7.00
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.41	2.51	3.64
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above . .	2.07	.93	3.45
Excess of the latter over the former	+.66	—1.58	—.19

(Nos. 48 to 49.) **Eastern Minnesota.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
49. Aggregate number of observations at all the stations.	Surface wind.	Spring	71	116	145	65	148	49	175	99	129	S. 50° 5′ W.	.01	N. 53° E.	.22	368
		Summer	32	23	46	37	196	36	116	41	17	S. 25 42 W.	.35	S. 12 E.	.18	214
		Autumn	6	2	14	12	72	27	67	66	1	S. 67 19 W.	.44	S. 83 W.	.22	90
		Winter	27	32	60	20	38	86	93	40	54	S. 67 40 W.	.20	N. 2 E.	.06½	181
		The year[1]	...	...	...	...	...	...	...	...	...	S. 53 3 W.	.24	....	...	853
	Motion of clouds.	Spring	21	18	52	27	48	22	77	64	...	S. 86 7 W.	.16½	N. 85 E.	.05	215
		Summer	33	11	42	21	29	45	142	15	...	S. 78 33 W.	.36	S. 67 W.	.14	153
		Autumn	3	1	8	6	2	14	59	0	...	S. 77 28 W.	.62	S. 72¼ W.	.40	90
		Winter	3	2	12	1	1	0	6	2	...	N. 58 28 E.	.29	N. 70 E.	.49	90
		The year[1]	...	...	...	....	...	...	...	...	...	S. 85 48 W.	.22	....	...	548
	Two preceding combined.	Spring	92	134	197	92	196	71	252	163	129	S. 81 20 W.	.04½	N. 60 E.	.21	
		Summer	65	34	88	58	225	81	258	56	17	S. 46 4 W.	.32	S. 2 W.	.11	
		Autumn	9	3	22	18	74	41	126	66	1	S. 70 38 W.	.48½	S. 79 W.	.24	
		Winter	30	34	72	21	39	86	99	42	54	S. 68 32 W.	.18	N. 50 E.	.08	
		The year[1]	...	...	...	...	...	...	...	...	...	S. 63 11 W.	.25			

[1] Computed from the resultants for the seasons.

(Nos. 50 and 51.) **Northern and Northeastern Minnesota.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Beaver Bay,	H. and C. Wieland,	10	3	1859 to 1869 inclusive.
Burlington,	A. A. Hibbard,	3	1	1857 to 1860 inclusive.
Cass Lake,	A. Barnard,	0	6	1852 and 1853.
Fond du Lac,	Rev. Jos. W. Holt,	1	2	1849 and 1850.
Lake Winnebigashish,	Rev. B. F. Odell,	0	6	1856 and 1857.
Sandy Lake,	Samuel Spates,	2	4	1850, 1851 and 1852.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
50. Surface wind at Lake Winnebigashish[1] in the years 1856 and 1857.	No. of observations.	Spring	24	13	3	25	21	16	7	14	...	S. 13° 32′ E.	.05
		Autumn	13	4	2	9	18	2	4	12	...	S. 61 31 W.	.0385
		Winter	47	10	7	39	36	15	29	39	...	N. 73 43 W.	.1104
	No. of Miles.	Spring	94	50	8	140	102	44	32	54	...	S. 32 27 E.	.13
		Autumn	44	8	14	28	109	4	18	32	...	S. 30 8 W.	.18½
		Winter	132	55	18	306	159	60	196	199	...	S. 44 55 W.	.12
	Mean velocity in miles per hour.	Spring	3.92	3.85	2.67	5.60	4.86	2.75	4.57	3.86			
		Autumn	3.38	2.00	7.00	3.11	6.06	2.00	4.50	2.67			
		Winter	2.81	5.50	2.57	7.85	4.42	4.00	6.76	5.10			

[1] From this table we obtain the following summary of results:—

	Spring.	Autumn.	Winter.
Average velocity of all winds in miles per hour	4.26	4.02	5.07
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.21	.15	.56
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above . .	.54	.75	.62
Excess of the latter over the former	+.33	+.60	+.06

(Nos. 50 and 51.) **Northern and Northeastern Minnesota.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
51. Aggregate number of observations at all the stations.	Surface wind.	Spring	317	1116	270	101	176	412	398	635	375	N. 0° 26′ W.	.27	N. 59° E.	.14
		Summer	189	986	304	112	237	560	431	407	473	N. 4 15 W.	.12½	S. 59 E.	.14
		Autumn	433	644	234	104	206	514	601	748	281	N. 43 20 W.	.28	N. 83 W.	.06½
		Winter	378	434	167	124	183	606	582	989	310	N. 59 11 W.	.35½	S. 87 W.	.12
		The year[1]	...	...	...	...	...	...	...	...	...	N. 33 8 W.	.23		
	Motion of clouds.	Spring	127	186	64	23	39	125	260	252	...	N. 47 3 W.	.40	N. 51 E.	.12
		Summer	79	59	71	7	35	168	314	269	...	N. 73 14 W.	.54½	S. 71½ W.	.14
		Autumn	120	145	9	34	57	174	325	348	...	N. 60 56 W.	.42	N. 72½ E.	.02
		Winter	82	84	77	15	54	152	161	259	...	N. 63 25 W.	.38½	S. 49 E.	.05
		The year[1]	...	...	...	...	...	...	...	...	...	N. 62 3 W.	.43		
	Two preceding combined.	Spring	444	1302	334	124	215	537	658	887	375	N. 13 51 W.	.27½	N. 58 E.	.13½
		Summer	268	1045	375	119	272	728	745	676	473	N. 41 8 W.	.17½	S. 47½ E.	.09
		Autumn	553	789	326	138	263	688	926	1096	281	N. 49 17 W.	.31½	N. 79½ W.	.06
		Winter	460	518	244	139	237	758	743	1248	310	N. 60 3 W.	.36	S. 84 W.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	N. 42 57 W.	.27		

[1] Computed from the resultants for the seasons.

(Nos. 52 and 53.) **Northwestern Wisconsin.**

Observed at the following places, viz.:—

Ashland, Bay City or *Whittlesey*, by Edwin Ellis, for an aggregate period of 52 months, in the years 1856 to 1861 inclusive.

Bayfield, by H. J. Nourse, for an aggregate period of 22 months, in the years 1867, 1868 and 1869.

Odanah, by Edwin Ellis, for an aggregate period of 34 months, in the years 1861 to 1866 inclusive.

Superior, by W. H. Newton, L. and R. Washington, C. Loring, Jr., Wm. Mann, G. R. Stuntz, and E. B. Bly, for an aggregate period of nearly five years in the years 1855, 1856 and 1860 to 1863 inclusive.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
52. Surface wind at Bay City and Superior[1] in the years 1855, 1856 and 1857.	No. of observat'ns.	Spring	52	124	49	15	33	26	30	37	...	N. 45° 0′ E.	.346
		Summer	53	243	51	45	79	152	94	80	...	N. 3 5 W.	.079
		Autumn	41	159	20	21	37	243	59	106	...	N. 88 18 W.	.231
		Winter	49	53	7	14	18	109	85	55	...	N. 82 5 W.	.380
		The year[2]	...	...	...	...	...	...	...	...	...	N. 44 22 W.	.147
	No. of miles.	Spring	166	1401	357	42	90	227	290	290	...	N. 33 43 E.	.45
		Summer	387	2584	334	122	208	881	693	810	...	N. 10 51 E.	.32
		Autumn	257	2189	223	105	125	1086	378	1172	...	N. 4 27 W.	.30
		Winter	305	383	18	30	36	266	409	332	...	N. 42 43 W.	.43
		The year[2]	...	...	...	...	...	...	...	...	...	N. 0 15 W.	.33
	Mean velocity in miles per hour.	Spring	3.19	11.30	7.29	2.80	2.73	8.73	9.67	7.84			
		Summer	7.30	10.63	6.55	2.71	2.63	5.80	7.37	10.12			
		Autumn	6.27	13.77	11.15	5.00	3.38	4.47	6.41	11.06			
		Winter	6.22	7.23	2 57	2.14	2.00	2.44	4.81	6.04			

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.82	7.55	8.07	4.56	7.00
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.71	0.60	1.86	1.73	1.03
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.55	2.39	2.44	1.97	2.30
Excess of the latter over the former	+.84	+1.79	+.58	+.24	+1.27

[2] Computed from the resultants for the seasons.

(Nos. 52 and 53.) **Northwestern Wisconsin**—*Continued.*

Kind of observation.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
			Relative Prevalence of Winds from the Different Points of the Compass.												
53. Aggregate number of observations at all the stations.	Surface wind.	Spring	236	1284	319	171	498	632	284	335	7	N. 61° 33′ E.	.13½	N. 59° E.	.24
		Summer	113	1330	172	127	581	1076	281	259	9	S. 6 5 W.	.05	S. 82 E.	.08
		Autumn	164	780	137	84	517	1046	320	363	11	S. 58 50 W.	.19½	S. 63 W.	.09
		Winter	224	541	118	124	535	1247	479	470	6	S. 62 54 W.	.33	S. 65 W.	.22
		The year[1]	...	...	...	...	...	...	...	...	...	S. 55 59 W.	.10½		
	Motion of clouds.	Spring	112	191	108	25	34	178	111	199	...	N. 28 51 W.	.25	N. 59 E.	.16
		Summer	86	273	64	53	38	346	209	232	...	N. 69 11 W.	.26½	S. 16 E.	.05
		Autumn	111	252	57	30	38	337	172	247	...	N. 63 9 W.	.29½	S. 9½ W.	.01
		Winter	72	77	21	19	29	197	115	187	...	N. 75 31 W.	.43	S. 78½ W.	.16
		The year[1]	...	...	...	...	...	...	...	...	...	N. 62 7 W.	.30		
	Two preceding combined.	Spring	348	1475	427	196	532	810	395	534	7	N. 26 37 E.	.12½	N. 60 E.	.21
		Summer	199	1603	236	180	619	1422	490	491	9	N. 44 54 W.	.09	N. 47 E.	.19
		Autumn	275	1032	194	114	555	1383	492	610	11	S. 78 49 W.	.19½	S. 54 W.	.08
		Winter	296	618	139	143	564	1444	594	657	6	S. 70 48 W.	.33	S. 58 W.	.22
		The year[1]	...	...	...	...	...	...	...	...	...	N. 86 14 W.	.13		

[1] Computed from the resultants for the seasons.

(Nos. 54 to 57.) **Northern Michigan,** west of longitude 87°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Central Mine,	S. H. Whittlesey,	2	8	1867, 1868 and 1869.
Clifton,	Wm. Van Orden, Jr.,	0	1	September, 1863.
Copper Falls,	C. S. Whittlesey,	0	10	1856 and 1857.
Eagle River,	Mrs. M. A. Goff,	0	7	1856.
Fort Wilkins,	U. S. Army Surgeons,	2	1	1844, 1845 and 1846.
Garlic,	Edwin Ellis,	0	10	1864 and 1865.
Houghton,	J. B. Minick,	0	1	August, 1866.
Marquette,	G. H. Blaker and others,[1]	5	8	1857 to 1863 inclusive.
Ontonagon,	Edwin Ellis,	3	7	1866 to 1869 inclusive.
Pennsylvania Mine,	R. H. Griffith,	0	7	1867, 1868 and 1869.

Place and kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
			Relative Prevalence of Winds from the Different Points of the Compass.													
54. Fort Wilkins.		Spring	67	62	64	92	114	61	138	117	...	S. 72° 32′ W.	.13	S. 84½° E.	.15	184
		Summer	39	38	35	78	152	114	148	179	...	S. 71 41 W.	.37	S. 42 W.	.12	214
		Autumn	58	52	20	68	90	135	104	195	...	S. 89 47 W.	.32	N. 63 W.	.06	182
		Winter	115	33	45	48	100	93	128	141	...	N. 78 41 W.	.28	N. 5 W.	.08	180
		The year[2]	...	...	...	...	...	...	...	...	...	S. 84 29 W.	.27	....	...	760
55. Marquette.	Surface wind.	Spring	171	130	130	170	131	110	131	407	187	N. 34 51 W.	.17	N. 59 E.	.12	
		Summer	154	112	141	122	124	180	168	261	168	N. 65 11 W.	.13	S. 76 E.	.09	
		Autumn	143	140	108	122	175	226	245	439	118	N. 72 43 W.	.26	N. 89 W.	.05	
		Winter	61	68	60	128	142	197	258	434	97	N. 85 1 W.	.35	S. 73½ W.	.15	
		The year[2]	...	...	...	...	...	...	...	...	...	N. 69 30 W.	.22			
	Motion of clouds.	Spring	32	6	6	5	15	24	51	44	...	N. 69 32 W.	.50	N. 49 E.	.14	
		Summer	26	2	7	1	15	62	75	41	...	S. 88 42 W.	.60½	S. 15½ W.	.10	
		Autumn	34	17	4	11	33	48	124	106	...	N. 77 32 W.	.56	N. 43 E.	.05	
		Winter	7	3	0	3	6	30	55	40	...	N. 85 24 W.	.70	S. 76 W.	.12	
		The year[2]	...	...	...	...	...	...	...	...	...	N. 81 43 W.	.58½			
	The two combined.	Spring	203	136	136	175	146	134	182	451	187	N. 43 24 W.	.20	N. 60 E.	.13½	
		Summer	180	114	148	123	139	242	243	302	168	N. 76 8 W.	.19½	S. 62 E.	.07	
		Autumn	177	157	112	133	208	274	369	545	118	N. 74 17 W.	.31	N. 84½ W.	.04½	
		Winter	68	71	60	131	148	227	313	474	97	N. 85 5 W.	.38½	S. 82½ W.	.14	
		The year[2]	...	...	...	...	...	...	...	...	...	N. 72 54 W.	.26			

[1] Peter White and F. M. Bacon.

[2] Computed from the resultants for the seasons.

(Nos. 54 to 57.) **Northern Michigan.**—*Continued.*

Station	Kind of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
56. Surface wind at Smithsonian stations[1] in the years 1856 and 1857.[2]	No. of observations.	Spring	44	63	8	37	17	33	23	23	...	N. 22° 48′ E.	.154	N. 65° E.	.18
		Summer	32	41	10	75	47	51	51	59	...	S. 47 46 W.	.136	South.	.16
		Autumn	43	82	25	64	47	105	124	135	...	N. 79 45 W.	.265	S. 82 W.	.16
		Winter	93	64	11	49	44	44	51	66	...	N. 28 22 W.	.188	N. 6½ E.	.10
		The year[3]	...	...	...	...	...	...	...	...	...	N. 55 51 W.	.118		
	No. of miles.	Spring	861	611	88	645	54	326	135	173	...	N. 35 53 E.	.29	N. 75 E.	.24
		Summer	186	362	28	506	189	324	176	446	...	S. 77 25 W.	.03½	S. 8½ E.	.18
		Autumn	7575	1063	251	602	423	1388	1757	2828	...	N. 63 6 W.	.40	N. 87 W.	.29
		Winter	2149	1141	92	794	462	695	585	955	...	N. 7 51 W.	.31	N. 8½ E.	.14
		The year[3]	...	...	...	...	...	...	...	...	...	N. 23 1 W.	.23		
	Mean velocity in miles per hour.	Spring	19.57	9.70	11.00	17.43	3.18	9.88	5.87	7.52					
		Summer	5.81	8.80	2.80	6.75	4.02	6.35	3.45	7.56					
		Autumn	17.60	12.96	10.04	9.41	9.00	13.22	14.17	20.95					
		Winter	23.11	17.83	8.36	16.20	10.50	16.80	11.47	14.47					
57. Aggregate number of observations at all stations.	Surface winds.	Spring	355	721	285	488	526	501	500	784	248	N. 60 36 W.	.08½	N. 61½ E.	.13
		Summer	279	520	266	484	663	843	632	798	254	S. 65 20 W.	.19½	S. 12½ E.	.06
		Autumn	320	602	215	403	563	959	655	1033	195	S. 85 34 W.	.23½	N. 86 W.	.04
		Winter	395	461	178	341	540	887	635	912	149	S. 85 13 W.	.28	S. 89½ W.	.09
		The year[3]	...	...	...	...	...	...	...	...	...	S. 83 53 W.	.19		
	Motion of clouds.	Spring	48	31	12	30	17	39	79	85	...	N. 60 5 W.	.38	N. 61½ E.	.15
		Summer	42	35	24	52	23	94	151	119	...	N. 84 4 W.	.44½	S. 16 E.	.08
		Autumn	75	59	20	80	42	104	210	203	...	N. 74 26 W.	.41	S. 85 E.	.07
		Winter	17	8	2	10	13	38	87	78	...	N. 78 41 W.	.70	N. 85 W.	.22
		The year[3]	...	...	...	...	...	...	...	...	...	N. 75 52 W.	.48		
	The two combined.	Spring	403	752	297	518	543	540	579	869	248	N. 60 27 W.	.10	N. 66½ E.	.13
		Summer	321	555	290	536	686	937	783	917	254	S. 71 42 W.	.21	S. 5½ E.	.06½
		Autumn	395	661	235	483	605	1063	865	1236	195	N. 84 3 W.	.25	N. 59½ W.	.05
		Winter	412	469	180	351	553	925	722	990	149	S. 87 7 W.	.29	S. 81 W.	.08
		The year[3]	...	...	...	...	...	...	...	...	...	S. 89 44 W.	.20½		

(Column group heading: Relative Prevalence of Winds from the Different Points of the Compass.)

[1] Including also Marquette.
[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.79	6.06	14.51	16.29	11.91
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity . .	1.66	.82	3.85	3.06	1.41
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.10	.22	5.83	5.06	2.75
Excess of the latter over the former	+1.44	—.60	+1.98	+2.00	+1.34

[3] Computed from the resultants for the seasons.

(Nos. 58 to 61.) **Manitoba,** south of latitude 50°, and **Canada West,** north of latitude 45°. Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Abbitibbe Post, New Britain,	James Lockhart,	1	4	1868 and 1869.
Kenogumissee, " "	Thomas Richards,	1	4	1860 to 1863 inclusive.
Michipicoten, Canada West,	John Swanston & C. Rankin,	4	10	1847 and 1860 to 1866 inclusive.
Winnipeg, New Britain,	James Stewart,	0	9	1869.

(Nos. 58 to 61.) **New Britain and Canada West.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
58. Winnipeg.	Surface wind.	Spring	81	29	18	18	55	17	27	31	...	N. 12° 32′ W.	.16	N. $33\frac{1}{2}$° E.	$.09\frac{1}{2}$	
		Summer	56	26	32	16	62	16	30	38	...	N. 21 19 W.	$.06\frac{1}{2}$	S. 76 E.	.06	
		Autumn	32	5	4	2	25	4	7	11	...	N. 31 37 W.	.18	N. 6 W.	.07	
		Winter	31	6	5	13	56	9	20	37	...	S. 73 25 W.	.20	S. 38 W.	.17	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 47 30 W.	.12			
	Motion of clouds.	Spring	49	11	8	10	28	9	7	17	...	N. 5 18 W.	.20	N. 51 E.	.25	
		Summer	28	3	8	5	18	33	28	34	...	N. 81 21 W.	.40	N. 86 W.	.13	
		Autumn	20	0	2	1	32	4	10	6	...	S. 51 50 W.	.24	S. 8 E.	.20	
		Winter	30	3	2	8	22	13	15	19	...	N. 72 38 W.	.26	N. 47 W.	$.04\frac{1}{2}$	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 77 52 W.	.22			
	Two preceding combined.	Spring	130	40	26	28	83	26	34	48	...	N. 9 47 W.	$.17\frac{1}{2}$	N. 44 E.	$.15\frac{1}{2}$	
		Summer	84	29	40	21	80	49	58	72	...	N. 69 11 W.	.17	S. 89 W.	.02	
		Autumn	52	5	6	3	57	8	17	17	...	N. 83 7 W.	.14	S. 2 W.	$.04\frac{1}{2}$	
		Winter	61	9	7	21	78	22	35	56	...	S. 88 40 W.	$.21\frac{1}{2}$	S. 50 W.	$.10\frac{1}{2}$	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 65 51 W.	.15			
59. Michipicoten.		Spring	144	227	178	44	54	151	276	91	307	N. 23 39 W.	.13	N. 36 E.	.07	
		Summer	49	91	67	31	45	149	399	57	376	S. 87 15 W.	.31	S. 70 W.	.23	
		Autumn	204	221	137	55	111	259	159	106	256	N. 39 44 W.	.09	N. $84\frac{1}{2}$ E.	$.03\frac{1}{2}$	
		Winter	258	231	256	69	141	199	176	84	296	N. 31 29 E.	.10	N. 82 E.	$.14\frac{1}{2}$	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 54 22 W.	.11			
60. Kenogumissee.		Spring	87	80	25	21	120	42	38	44	...	N. 3 24 E.	.09	N. $42\frac{1}{2}$ E.	.21	153
		August	13	0	5	0	37	5	14	19	...	S. 61 30 W.	.32	S. $58\frac{1}{2}$ W.	.17	31
		Autumn	70	36	46	11	163	77	49	94	...	S. 55 6 W.	.20	S. 31 W.	.06	182
		Winter	62	22	35	5	120	36	20	63	...	S. 53 11 W.	.12	S. $72\frac{1}{2}$ E.	.04	121
		The year[1]	...	...	...	...	...	...	...	...	...	S. 64 46 W.	.15	....	...	487
61. Abbitibbe Post.		Spring	88	58	12	26	88	28	23	136	0	N. 34 19 W.	.26	N. 39 E.	.13	
		Summer	44	9	12	7	67	33	30	74	0	N. 84 51 W.	.30	S. $39\frac{1}{2}$ W.	.11	
		Autumn	38	4	13	13	61	27	28	89	0	N. 80 20 W.	$.31\frac{1}{2}$	S. 55 W.	.10	
		Winter	84	20	22	41	80	23	32	125	0	N. 49 24 W.	.22	N. 62 E.	.07	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 64 33 W.	$.25\frac{1}{2}$			

[1] Computed from the resultants for the seasons.

(Nos. 62 to 65.) **Northern Michigan**, east of longitude 87°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Fort Brady,	U. S. Army Surgeons,	29	0	1823 to 1856 inclusive, except the years 1826, 1829 and 1849.
Fort Mackinac,	" " "	22	0	1826, 1831 to 1836, and 1842 to 1859 both inclusive.
Lake George,	J. H. Foster and E. Perrault,	0	4	1859.
Northport,	H. R. Schitterley and Rev. G. N. Smith,	4	7	1862, 1863 and 1866 to 1869 inclusive.
Presque Isle,	Mr. Woolsey,	0	6	1842 and 1843.
St. James,	James J. Strang,	3	4	1852 to 1856 inclusive.
Sugar Island,	U. S. Engineers,	0	10	1866, 1867 and 1868.
Thunder Bay Island,	U. S. Engineers and J. J Malden,	2	6	1858, 1859 and 1869.

(Nos. 62 to 65.) **Northern Michigan.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S.& W.	West.	N. W. or between N.& W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
62. Fort Mackinac.	Spring	614	577	1087	458	293	428	1019	1070	...	N. 16° 48′ W.	.16	N. 54½° E.	.10
	Summer	703	431	824	498	510	526	1488	852	...	N. 69 2 W.	.18	S. 55 W.	.06
	Autumn	684	380	735	559	572	613	1072	1003	...	N. 72 15 W.	.15	S. 24 W.	.06
	Winter	811	640	493	560	524	495	954	1040	...	N. 43 45 W.	.18	N. 7 W.	.03
	The year[2]	...	...	...	...		...	...	...	...	N. 50 37 W.	.16		
63. Fort Brady.	Spring	462	284	1052	973	467	510	1041	991	...	S. 46 44 W.	.04	N. 32 W.	.02
	Summer	281	228	606	695	569	576	1053	928	...	S. 66 42 W.	.19	S. 79 W.	.16
	Autumn	583	411	852	810	612	603	716	782	...	S. 6 12 E.	.03½	N. 65 E.	.02½
	Winter	572	477	1175	933	591	564	593	672	...	S. 69 23 E.	.13½	East	.14½
	The year[2]	...	...	...	...	...	...	...	...	...	S. 21 29 W.	.05		
64. Surface wind at St. James[1] in the years 1854, 1855 and 1856. No. of observations.	Spring	57	66	101	58	48	240	47	155	...	S. 71 13 W.	.181	S. 79½ E.	.07
	Summer	47	12	37	39	27	171	13	84	...	S. 63 14 W.	.293	S. 17½ W.	.09
	Autumn	45	30	59	53	39	146	10	137	...	S. 79 48 W.	.172	N. 79¾ E.	.07
	Winter	45	56	36	52	34	164	103	190	...	N. 82 23 W.	.342	N. 50 W.	.13
	The year[2]	...	...	...	...	...	...	...	...	...	S. 79 27 W.	.239		
No. of miles.	Spring	378	1079	2021	602	685	3530	406	1858	...	N. 41 8 W.	.138	S. 65 E.	.10
	Summer	523	259	463	423	576	2711	120	1201	...	S. 57 30 W.	.343	S. 43 W.	.17
	Autumn	824	367	964	673	886	1875	166	2085	...	S. 84 9 W.	.154	N. 27 E.	.05
	Winter	689	966	954	850	409	2112	893	2454	...	N. 73 37 W.	.194	N. 2½ W.	.12
	The year[2]	...	...	...	...	...	...	...	...	...	S. 70 49 W.	.191		
Mean velocity in miles per hour.	Spring	6.63	16.35	20.00	10.38	14.27	14.71	8.64	11.99	...				
	Summer	11.13	21.58	12.57	10.85	21.33	15.85	9.33	14.30	...				
	Autumn	18.31	12.23	16.34	12.70	22.72	11.47	16.60	15.22	...				
	Winter	15.31	17.25	26.50	16.35	12.03	12.88	8.67	12.92	...				
65. Aggregate number of observations at all stations. Surface winds.	Spring	1324	1110	2367	1763	942	1414	2384	2648	201	N. 47 16 W.	.08	N. 50 E.	.06
	Summer	1183	773	1574	1537	1279	1744	2944	2249	269	S. 83 47 W.	.19	S. 67½ W.	.10
	Autumn	1541	953	1730	1764	1455	1753	2023	2390	118	S. 88 19 W.	.09½	S. 12 E.	.02
	Winter	1588	1355	1837	1873	1401	1560	2040	2576	106	N. 57 21 W.	.07	N. 65 E.	.05
	The year[2]	...	...	...	...	...	...	...	...	...	N. 80 2 W.	.10		
Motion of clouds.	Spring	16	28	16	23	22	227	66	131	...	S. 75 15 W.	.52	S. 61 E.	.05
	Summer	20	5	7	3	44	141	88	47	...	S. 66 52 W.	.64	S. 19½ W.	.15
	Autumn	63	10	19	14	43	183	126	137	...	S. 87 13 W.	.52½	N. 8½ E.	.09
	Winter	26	11	23	24	44	159	146	156	...	S. 84 47 W.	.55	N. 6½ W.	.06
	The year[2]	...	...	...	...	...	...	...	...	...	S. 78 7 W.	.55		
The two combined.	Spring	1340	1138	2383	1786	964	1641	2450	2779	201	N. 57 18 W.	.09	N. 54 E.	.05½
	Summer	1203	778	1581	1540	1323	1885	3032	2296	269	S. 82 25 W.	.20½	S. 66 W.	.09
	Autumn	1604	963	1749	1778	1498	1936	2149	2527	118	S. 88 24 W.	.12	S. 1 W.	.03
	Winter	1614	1366	1860	1897	1445	1719	2186	2732	106	N. 66 23 W.	.09	N. 60 E.	.04
	The year[2]	...	...	...	...	...	...	...	...	...	N. 83 24 W.	.12		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	13.68	14.59	15.11	13.72	14.27
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.48	4.27	2.60	4.69	3.41
True velocity in mean direction, giving the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.88	5.00	2.33	2.66	2.73
Excess of the latter over the former	—.60	+.73	—.27	—2.03	—.68

[2] Computed from the resultants for the seasons.

(Nos. 66 to 74.)

Canada East.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. years.	months.	Date.
Montreal,	A. Hall & J. McCord,	13	8	1836 to 1838, 1845 to 1853, 1855 to 1858, and 1861 to 1863, all incl.
Quebec,	West and others,	8	0	1743, 1744, May, 1765, to May, 1766, and 1832 to 1836 inclusive.
St. Anne,	John Donoghue,	0	6	November, 1866, to April, 1867, inclusive.
St. Martins,	Chas. Smallwood,	7	1	1854 to 1859 inclusive, 1860 and January, 1861.
Stanbridge,	A. H. Gilmour,	10	1	1856 to 1865 inclusive, 1868 and 1869.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
66. Montreal and St. Martins,[1] surface wind in the years 1854, 1855, 1856 and 1857.	No. of observations.	Spring	80	379	16	145	89	432	189	316	...	N. 77° 20′ W.	.205	N. 59° E.	.06
		Summer	63	212	30	168	121	546	186	290	...	S. 66 31 W.	.319	S. 16 W.	.14
		Autumn	107	310	20	165	106	554	169	417	...	N. 89 14 W.	.268	S. 57 W.	.02
		Winter	71	395	10	97	54	413	213	392	...	N. 63 22 W.	.283	N. 1½ E.	.12
		The year[3]	...	...	...	...	...	...	...	...	...	N. 87 42 W.	.304		
	No. of miles.	Spring	468.8	2998.2	62.8	634.5	422.1	1823.2	1130.0	2337.2	...	N. 34 42 W.	.256	N. 53 E.	.17
		Summer	524.0	1350.0	124.	488.0	609.0	2219.0	1326.0	1643.0	...	N. 87 32 W.	.326	S. 24½ W.	.10
		Autumn	874.5	2485.0	126.	1005.	711.0	3358.5	1654.5	3240.0	...	N. 73 11 W.	.286	S. 15 E.	.03
		Winter	447.0	2145.6	86.	400.7	231.5	2857.5	2157.0	2933.4	...	N. 71 0 W.	.403	N. 78 W.	.10½
		The year[3]	...	...	...	...	...	...	...	...	...	N. 68 23 W.	.304		
	Mean velocity in miles p'r hour.	Spring	5.86	7.91	3.92	4.38	4.74	4.22	5.98	7.40	...				
		Summer	8.32	6.37	4.13	2.90	5.03	4.06	7.13	5.67	...				
		Autumn	8.17	8.02	6.30	6.09	6.71	6.06	9.79	7.77	...				
		Winter	6.30	5.43	8.60	4.13	4.29	6.92	10.13	7.48	...				
67. Montreal and St. Martins. Aggregate number of observations for entire period, except the first two years.	Surface wind.	Spring	673	965	197	466	485	1131	1196	1022	47	N. 72 W.	.26½	N. 41 E.	.05
		Summer	417	766	199	499	636	1576	1249	844	162	S. 74 26 W.	.32	S. 11 W.	.12
		Autumn	397	883	153	500	545	1318	1260	1213	90	N. 88 33 W.	.30	S. 27 W.	.03
		Winter	772	1125	121	282	413	1125	1296	1097	60	N. 61 53 W.	.31½	N. 70 E.	.11
		The year[3]	...	...	...	...	...	...	...	...	...	N. 82 37 W.	.29		
	Motion of clouds.	Spring	94	190	12	61	85	203	251	205	...	N. 73 48 W.	.33	N. 23½ E.	.05
		Summer	97	157	20	53	129	355	179	203	...	S. 80 45 W.	.34½	S. 3 W.	.10½
		Autumn	93	198	17	62	128	315	215	296	...	N. 83 54 W.	.34	S. 9½ W.	.01
		Winter	125	208	10	30	56	256	265	175	...	N. 70 38 W	.37	N. 10½ W.	.07
		The year[3]	...	...	...	...	...	...	...	...	...	N. 81 44 W.	.34		
	Two preceding combined.	Spring	767	1115	209	527	570	1334	1447	1227	47	N. 74 7 W.	.28	N. 27½ E.	.04
		Summer	514	923	219	552	765	1931	1428	1047	162	S. 74 54 W.	.30½	S. 1½ E.	.12
		Autumn	490	1081	170	562	673	1633	1475	1509	90	N. 87 40 W.	.31	S. 33 W.	.03
		Winter	897	1333	131	312	469	1381	1561	1272	60	N. 63 24 W.	.32	N. 4 E.	.11
		The year[3]	...	...	...	...	...	...	...	...	...	N. 82 31 W.	.29½		
68. Montreal, 1836.		The year	263	100	50	35	223	291	320	150	...	S. 88 32 W.	.50		
69. Montreal, 1837.		The year	226	154	30	44	154	240	406	154	...	N. 88 13 W.	.45		
70. Stanbridge.[2] Surface winds in the years 1856 and 1857.	No. of observations.	Spring	17	36	17	51	85	24	85	18	36	S. 23 1 W.	.244	N. 55 W.	.12
		Summer	9	26	16	67	70	10	44	18	16	S. 12 1 E.	.313	S. 73½ E.	.07
		Autumn	10	28	12	62	79	12	41	14	14	S. 10 3 E.	.342	S. 53 E.	.07
		Winter	20	11	17	49	74	15	43	20	20	S. 6 8 W.	.289	N. 83 W.	.03
		The year[3]	...	...	...	...	...	...	...	...	...	S. 0 3 W.	.30		
	No. of miles.	Spring	70	177	48	209	424	119	505	62	...	S. 36 49 W.	.32	N. 74½ W.	.09
		Summer	30	92	38	270	245	76	306	122	...	S. 26 15 W.	.27½	N. 28 W.	.04
		Autumn	56	206	40	291	502	52	262	96	...	S. 2 59 E.	.30	S. 81 E.	.12
		Winter	84	73	34	248	537	78	292	134	...	S. 18 37 W.	.35½	S. 18½ W.	.02½
		The year[3]	...	...	...	...	...	...	...	...	...	S. 18 18 W.	.32		
	Mean velocity in miles p'r hour.	Spring	4.12	4.92	2.82	4.10	4.99	4.96	5.94	3.44	...				
		Summer	3.33	3.54	2.37	4.03	3.50	7.60	6.96	6.78	...				
		Autumn	5.60	7.36	3.33	4.69	6.35	4.33	6.39	6.86	...				
		Winter	4.20	6.64	2.00	5.06	7.26	5.20	6.79	6.70	...				

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.97	5.13	7.28	6.84	6.31
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.23	1.64	1.95	1.94	1.92
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table . .	1.53	1·67	2.08	2.76	1.92
Excess of the latter over the former	+.30	+.03	+.13	+.82	.00

[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.37	4.53	5.83	5.94	4.92
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.18	1.42	1.99	1.72	1.48
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table . .	1.41	1.25	1.75	2.11	1.57
Excess of the latter over the former	+.23	—.17	—.24	+.39	+.09

[3] Computed from the resultants for the seasons.

(Nos. 66 to 71.) **Canada East.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N.E. or between N. & E.	East.	S.E. or between S. & E.	South.	S.W. or between S. & W.	West.	N.W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
71. Stanbridge, aggregate.	Spring	258	243	161	539	477	373	667	266	110	S. 38° 47′ W.	.21	N. 0½° W.	.07	
	Summer	167	176	150	549	681	425	496	195	80	S. 16 7 W.	.33½	S. 24 E.	.10	
	Autumn	133	206	99	403	573	293	551	208	73	S. 30 26 W.	.29	S. 42 W.	.02½	
	Winter	176	165	119	426	529	331	651	203	97	S. 38 52 W.	.24	N. 26 W.	.05	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 29 22 W.	.26½	....	...	460
72. Quebec, 1832–6.	Spring	...	...	189	...	...	...	214	...	57	Westerly	.05½	....	...	460
	Summer	...	...	136	...	...	...	276	...	48	Westerly	.31	....	...	455
	Autumn	...	...	106	...	...	...	309	...	40	Westerly	.45	....	...	451
	Winter	...	...	139	...	...	...	270	...	43	Westerly	.29	....	...	1826
	The year	...	...	570	...	...	...	1069	...	188	Westerly	.27			
73. Quebec, 1743, 1744, 1765 and 1766.[1]	The year	4	195	25	9	15	269	56	47	...	S. 71 42 W.	.19			
74. St. Anne.[2]	Spring	6	31	18	26	13	48	18	22	...	S. 22 49 W.	.13			
	Autumn	0	8	3	12	15	23	19	12	...	S. 46 6 W.	.40			
	Winter	9	30	29	23	19	114	47	45	..	S. 59 56 W.	.34			

The first ten wind columns are headed "Relative Prevalence of Winds from the Different Points of the Compass."

[1] Observed by Gautier in the years 1743 and 1744; name of observer in 1765 and 1766 not ascertained.
[2] Surface wind and motion of clouds combined.
[3] Computed from the resultants for the seasons.

(Nos. 75 and 76.) **Central Maine,** latitude 45° to 46°.

Observed as follows:—

Name of station.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Foxcroft,	M. Pitman,	0	7	1863 and 1864.
Lee,	E. Pitman,	3	2	1864 to 1867 inclusive.
Monson,	B. F. Wilbur,	1	6	1856 and 1857.
Williamsburg,	E. Pitman,	3	3	1863, 1864 and 1866 to 1869 inclusive.

Kind of observations.		Time of the year.	North.	N.E. or between N. & E.	East.	S.E. or between S. & E.	South.	S.W. or between S. & W.	West.	N.W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days
75. Monson.[1] Surface winds in the years 1856 and 1857.	No. of observations.	Spring	17	36	18	10	64	19	33	75	N. 77° 21′ W.	.182	S. 8° W.	.05	92
		Summer	14	7	25	101	53	17	25	141	S. 63 17 W.	.101	S. 31½ E.	.15	154
		Autumn	38	20	32	113	50	25	37	187	N. 58 51 W.	.131	S. 72 E.	.06	182
		Winter	24	27	22	12	37	16	33	161	N. 47 19 W.	.424	N. 35½ W.	.25	180
		The year	...	...	...	...	...	...	...	...	N. 61 0 W.	.19	....	...	608
	No. of miles.	Spring	54	98	36	22	128	42	80	192	N. 55 27 W.	.26	N. 59 W.	.11	92
		Summer	94	36	94	751	184	42	98	426	S. 34 22 E.	.22	S. 41½ E.	.37	154
		Autumn	245	97	124	1017	177	123	193	883	S. 9 16 E.	.06	S. 40½ E.	.20	182
		Winter	126	102	74	48	80	38	100	1181	N. 41 13 W.	.61	N. 38 W.	.42	180
		The year[2]	...	...	...	...	...	...	...	...	N. 52 0 W.	.15	....	...	608
	Mean velocity in miles per hour.	Spring	3.18	2.72	2.00	2.20	2.00	2.21	2.42	2.56	....	...	....	...	92
		Summer	6.71	5.14	3.76	7.44	3.47	2.47	3.92	3.02	....	...	....	...	154
		Autumn	6.45	4.85	3.87	9.00	3.54	4.92	5.22	4.72	....	...	....	...	182
		Winter	5.25	3.78	3.36	4.00	2.16	2.37	3.03	7.34	....	...	....	...	180
		The year	5.40	4.12	3.45	5.66	2.79	2.99	3.65	4.41	....	...	....	...	608

The eight wind columns are headed "Relative Prevalence of Winds from the Different Points of the Compass."

☞ [1] For note see next page.

[2] Computed from the resultants for the seasons.

(Nos. 75 and 76.) **Central Maine.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
76. Aggregate number of observations at all the stations.	Surface wind.	Spring	77	355	65	306	106	254	187	599	115	N. 55° 19′ W.	.15	N. 88° E.	.10
		Summer	90	148	76	376	171	514	250	592	164	S. 72 17 W.	.26	S. 9½ W.	.16
		Autumn	87	224	50	282	102	346	183	661	137	N. 71 7 W.	.25	S. 88 W.	.01½
		Winter	136	348	69	177	132	301	218	966	125	N. 48 33 W.	.36½	N. 17 W.	.17½
		The year[2]	...	...	...	...	...	...	...	...	...	N. 69 24 W.	.23½		
	Motion of clouds.	Spring	10	25	31	14	5	8	15	25	...	N. 39 13 E.	.24	N. 65 E.	.32
		Summer	6	9	15	33	18	22	14	23	...	S. 0 50 W.	.20	S. 28½ E.	.28
		Autumn	11	9	2	9	6	27	19	40	...	N. 74 38 W.	.43½	N. 77 W.	.29
		Winter	13	19	33	6	17	24	62	45	...	N. 71 34 W.	.29	N. 73 W.	.14
		The year[2]	...	...	...	...	...	...	...	...	...	N. 70 41 W.	.14½		
	Two preceding combined.	Spring	87	380	96	320	111	262	202	624	115	N. 40 53 W.	.16½	N. 69½ E.	.11
		Summer	96	157	91	409	189	536	264	615	164	S. 69 51 W.	.25	S. 6 W.	.17½
		Autumn	98	233	52	291	108	373	202	701	137	N. 71 32 W.	.26	S. 81 W.	.03
		Winter	149	367	102	183	149	325	280	1011	125	N. 50 2 W.	.35½	N. 21 W.	.15
		The year[2]	...	...	...	...	...	...	...	...	...	N. 67 46 W.	.23		

☞ Note to Monson on preceding page.

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour . . .	2.39	4.50	5.25	5.03	4.46
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.44	.45	.69	2.23	.87
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	.55	1.00	.84	3.41	.72
Excess of the latter over the former	+.11	+.55	+.15	+1.18	—.15

[2] Computed from the resultants for the seasons.

(Nos. 77 to 81.) **Maine,** north of latitude 46°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Fort Fairfield,	U. S. Army Surgeons,	1	8	1842 and 1843.
Fort Kent,	" " "	1	9	1843 to 1845 inclusive.
Houlton,[1]	U. S. Army Surgeons and C. H. Fernald,	16	8	1829 to 1845 inclusive & 1869.
Patten,	S. Eveleth,	1	0	1849 and 1850.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
77. Fort Kent.	Spring	125	34	33	42	155	73	198	117	...	S. 88° 56′ W.	.32	S. 54½° W.	.06	215
	Summer	111	46	39	73	233	115	275	168	...	S. 73 36 W.	.35	S. 26 W.	.14	184
	Autumn	50	37	17	22	68	25	77	51	...	N. 81 19 W.?	.21	N. 85½ E.	.06	91
	Winter	132	44	34	39	70	48	123	101	...	N. 52 48 W.?	.29	N. 16 E.	.16	149
	The year[2]	...	...	...	...	...	...	...	...	...	N. 85 5 W.	.30	....	...	639

[1] Surface winds and motion of clouds combined in the year 1869. In all the other years the observations were made at Hancock Barracks.

[2] Computed from the resultants for the seasons.

(Nos. 77 to 81.) **Maine**, north of latitude 46°.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
78. Patten.	Spring	12	23	4	13	7	20	28	75	83	N. 52° 13′ W.	.31	N. 33° E.	.11	153
	Summer	1	1	3	2	9	13	4	19	5	S. 78 17 W.??	.38½	S. 20½ W.	.20	31
	Autumn	2	15	5	11	3	22	24	39	40	N. 72 26 W.?	.28½	S. 60 E.	.04	91
	Winter	0	7	6	5	10	9	12	70	43	N. 57 5 W.?	.39	N. 11 W.	.12	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 71 21 W.	.32	....	...	365
79. Fort Fairfield.	Spring	49	36	36	38	133	180	145	120	...	S. 64 34 W.	.40½	N. 64½ E.	.17	184
	Summer	11	14	8	15	118	313	148	109	...	S. 58 55 W.	.66	S. 25 W.	.10	184
	Autumn	14	0	2	12	28	158	82	68	...	S. 69 35 W.?	.68	N. 84 W.	.11	91
	Winter	25	21	8	20	100	187	140	95	...	S. 65 16 W.	.56	N. 48 E.	.02	152
80. Houlton.	January	159	122	55	79	96	42	84	184	..					
	February	128	115	58	52	102	45	90	167	...					
	March	130	124	79	106	92	59	85	153	...					
	April	125	110	58	96	167	69	73	106	...					
	May	118	81	93	135	189	74	61	82	...					
	June	66	80	720	119	195	103	84	82	...					
	July	59	70	61	122	236	120	86	77	...					
	August	110	94	48	92	251	90	91	59	...					
	September	101	76	35	80	139	73	64	112	...					
	October	123	98	43	93	139	52	56	103	...					
	November	141	81	53	84	73	30	67	155	...					
	December	150	125	51	59	99	47	67	119	...					
	Spring	373	315	230	337	448	202	219	341	...	N. 84 59 E.	.03½	S. 5 W.	.02½	
	Summer	235	244	839	333	682	313	261	218	...	S. 46 9 E.	.27	S. 36 E.	.27	
	Autumn	365	255	131	257	351	155	187	370	...	N. 21 36 W.	.08½	N. 53½ W.	.08½	
	Winter	437	362	164	190	297	134	241	470	...	N. 12 50 W.	.22½	N. 24½ W.	.21	
	The year[1]	...	...	...	...	...	...	...	...	...	N. 51 58 E.	.05			
81. Aggregate.	Spring	559	408	303	430	743	475	590	653	83	S. 81 29 W.	.12	S. 3 E.	.01	
	Summer	358	305	879	423	1042	754	688	514	5	S. 11 31 W.	.19	S. 25 E.	.19	
	Autumn	431	307	145	302	450	360	370	528	40	N. 76 15 W.	.15	N. 31 W.	.05	
	Winter	594	434	212	254	477	378	516	736	43	N. 50 41 W.	.21½	N. 19 W.	.15	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 85 49 W.	.11			

[1] Computed from the resultants for the seasons.

(Nos. 82 to 85.) **New Brunswick and Northern Nova Scotia.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time.		Date and remarks.
		yrs.	mos.	
Albion Mines, Nova Scotia,	Henry Poole,	11	5	1843 to 1855 inclusive.
St. John's, New Brunswick,	G. Murdock,	6	1	1863 to 1869 inclusive.
Wolfville, Nova Scotia,	C. F. Hartt and others,[1]	11	6	September, 1855, to December, 1869, inclusive, at Acadia College.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N.E or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
82. St. John's.	Surface wind.	Spring	193	298	64	140	116	476	62	306	...	N. 74° 9′ W.	.15	S. 82½° E.	.12
		Summer	116	131	35	90	170	866	56	192	...	S. 50 43 W.	.48	S. 16½ W.	.38
		Autumn	256	220	47	91	71	498	106	349	...	N. 68 42 W.	.29	N. 4 W.	.05
		Winter	310	267	33	74	50	218	163	594	...	N. 34 57 W.	.47	N. 1 W.	.33
		The year[2]	...	...	...	...	...	...	...	...	...	N. 77 45 W.	.27		
	Motion of clouds.	Spring	2	26	5	6	2	23	4	20	...	N. 29 27 W.	.16	S. 65½ E.	.26
		Summer	4	10	2	0	0	12	4	21	...	N. 46 20 W.	.48	N. 22½ W.	.09
		Autumn	7	8	4	4	1	12	4	22	...	N. 44 23 W.	.36	N. 78½ E.	.06
		Winter	2	6	0	0	1	12	10	24	...	N. 66 15 W.	.62	N. 89 W.	.26
		The year[2]	...	...	...	...	...	...	...	...	...	N. 51 52 W.	.40		
	Two preceding combined.	Spring	195	324	69	146	118	499	66	326	...	N. 68 56 W.	.13	S. 82 E.	.14
		Summer	120	141	37	90	170	878	60	213	...	S. 52 30 W.	.46½	S. 17 W.	.36
		Autumn	263	228	51	95	72	510	110	371	...	N. 67 37 W.	.29	N. 8 W.	.04½
		Winter	312	273	33	74	51	230	173	618	...	N. 36 10 W.	.47½	N. 4 W.	.32
		The year[2]	...	...	...	...	...	...	...	...	...	N. 76 7 W.	.27		

[1] Profs. D. F. Higgins and A. P. S. Stuart. [2] Computed from the resultants for the seasons.

(Nos. 82 to 85.) **New Brunswick and Northern Nova Scotia.**—*Continued.*

Station.	Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
83. Wolfville,[1] 1855, '56 & '57.	No. of observations.	Spring	11	52	54	31	16	53	151	103	68	N. 73° 48′ W.	.28½	N. 36½° E.	.08
		Summer	6	19	2	18	19	45	45	18	92	S. 62 55 W.	.26	S. 33 E.	.16
		Autumn	16	44	24	86	26	119	194	178	125	N. 89 36 W.	.35½	S. 70 W.	.04
		Winter	15	35	49	27	12	87	186	165	54	N. 76 14 W.	.44	N. 50 W.	.14
		The year[4]	...	...	...	...	...	...	...	...	...	N. 86 59 W.	.32½		
	No. of miles.	Spring	150	564	447	435	173	749	1207	1058	...	N. 77 51 W.	.25	N. 44½ E.	.14
		Summer	82	96	14	228	193	509	394	144	...	S. 52 57 W.	.30	S. 35½ E.	.17
		Autumn	158	346	176	925	250	1353	1637	1604	...	S. 83 2 W.	.35	N. 80 W.	.01
		Winter	204	413	601	391	161	1059	2446	1975	...	N. 89 49 W.	.52	N. 77 W.	.19
		The year[4]	...	...	...	...	...	...	...	...	...	S. 83 48 W.	.35		
	Mean velocity in miles per hour.	Spring	13.64	10.85	8.28	14.03	10.81	14.13	7.99	10.69	...				
		Summer	13.67	5.15	7.00	12.67	10.16	11.31	8.76	8.00	...				
		Autumn	9.87	7.86	7.33	10.76	9.62	11.37	8.44	9.01	...				
		Winter	13.60	11.80	12.27	14.48	13.42	12.61	13.15	12.09	...				
84. Wolfville, 1855 to 1869.	Surface wind.	Spring	136	432	252	222	163	370	658	529	477	N. 68 0 W.	.19	N. 54 E.	.12
		Summer	46	136	50	81	84	313	290	93	303	S. 67 31 W.	.29	S. 3½ E.	.11
		Autumn	114	282	201	221	136	608	743	511	577	S. 87 13 W.	.29	S. 45½ W.	.02
		Winter	83	221	219	168	100	453	838	663	341	N. 81 31 W.	.37	N. 59 W.	.11
		The year[4]	...	...	...	...	...	...	...	...	...	N. 89 54 W.	.27½		
	Motion of clouds.	Spring	34	45	40	43	35	108	160	128	...	N. 86 18 W.	.38	N. 62½ E.	.07
		Summer	7	40	6	23	30	101	75	34	...	S. 64 3 W.	.42	S. 18½ E.	.19
		Autumn	45	76	22	80	40	197	304	223	...	N. 87 29 W.	.47½	N. 61 W.	.05
		Winter	26	53	54	27	18	130	270	222	...	N. 77 19 W.	.52½	N. 31 W.	.14
		The year[4]	...	...	...	...	...	...	...	...	...	S. 89 11 W.	.43½		
	Two preceding combined.	Spring	170	477	292	265	198	478	818	657	477	N. 72 49 W.	.22	N. 56 E.	.11
		Summer	53	176	56	104	114	414	365	127	303	S. 66 39 W.	.31	S. 9½ E.	.12½
		Autumn	159	358	223	301	176	805	1047	734	577	S. 88 56 W.	.33	S. 76 W.	.02
		Winter	109	274	273	195	118	583	1108	885	341	N. 80 25 W.	.40	N. 54 W.	.11
		The year[4]	...	...	...	...	...	...	...	...	...	N. 89 54 W.	.30½		
85. Albion Mines.[2] Surface winds.	1st 3 mos. of 1854. No. of obs.	Spring	15	17	2	8	12	25	4	13	...	N. 85 30 W.?	.11½		
		Winter	15	22	8	19	31	38	9	56	...	S. 88 17 W.	.19½		
	No. of miles.	Spring	96	77	6	63	81	377	24	142	...	S. 63 43 W.	.37		
		Winter	165	149	18	296	336	268	92	777	...	N. 80 19 W.	.24		
	Mean vel. in miles p. h'r.	Spring	6.40	4.53	3.00	7.87	6.75	15.08	6.00	10.92	...				
		Winter	11.00	6.77	2.25	15.58	10.84	7.05	10.22	13.87	...				
	Aggregate for entire period.[3]	Spring	58	269	12	189	34	352	32	442	...	N. 60 41 W.	.21	N. 30 E.	.09
		Summer	16	230	3	207	46	439	28	282	...	S. 61 5 W.	.21	S. 20½ E.	.13½
		Autumn	11	161	1	168	8	326	9	332	...	N. 85 34 W.	.24	S. 68 W.	.01
		Winter	33	162	13	172	55	355	55	536	...	N. 77 14 W.	.32½	N. 58 W.	.10
		The year[4]	...	...	...	...	...	...	...	...	...	N. 85 5 W.	.23		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.24	9.65	9.39	12.69	10.49
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.91	2.52	3.33	5.61	3.39
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as given in this table	2.55	2.91	3.29	6.61	3.69
Excess of the latter over the former	—.36	+.39	—.04	+1.00	+.30

[2] From this table we obtain the following summary of results in respect to the velocity of the wind :—

	Spring.	Winter.
Average velocity of all winds in miles per hour	9.02	10.61
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.06	2.06
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.32	2.55
Excess of the latter over the former	+2.26	+.49

[3] Including also the motion of the clouds during the first three months of 1854.

[4] Computed from the resultants for the seasons.

(Nos. 86 and 87.) **St. John's, Newfoundland.**

Observed for an aggregate period of nine years and ten months, as follows, viz. :—

By John Templeman, during the years 1840 to 1843 inclusive.

By John Delany, Jr., and E. M. J. Delany, for an aggregate period of five years and seven months, in the years 1856 to 1859, and 1861 to 1864, both inclusive.

By Rev. R. C. Coswell, during the months of November and December, 1868, and February, 1869.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
86. 1840–3. Surface wind.																						
1840	33	46	60	2	18	11	54	11	59	21	132	29	94	22	40	6	30	S. 62° 6′ W.	...	....	...	36
1841	45	38	84	9	28	2	84	23	41	31	89	31	72	33	54	19	46	S. 78 26 W.	...	....	...	365
1842	28	31	40	8	8	0	25	12	22	34	78	32	72	19	32	15	27	S. 82 38 W.	...	....	...	365
1843	24	43	53	4	13	3	34	12	18	22	101	20	56	14	19	10	42	S. 74 27 W.	...	....	...	365
1840–3	529	600	841	84	255	59	711	239	525	391	1433	421	1051	320	566	224	496	S. 78 4 W.	...	....	...	1461
January	56	12	68	8	16	0	44	16	52	32	104	36	140	24	84	40	8	N. 87 52 W.	.33	....	...	124
February	40	64	60	16	8	4	36	16	56	36	32	12	68	60	120	36	20	N. 47 55 W.	.28	....	...	113
March	63	87	78	12	27	3	42	12	27	15	78	45	84	36	63	21	42	N. 41 12 W.	.22	....	...	124
April	20	60	56	4	20	8	48	36	48	28	140	40	80	24	52	8	40	S. 59 0 W.	.24	....	...	120
May	28	96	124	0	36	12	164	20	20	12	56	24	68	4	16	20	32	N. 84 82 E.	.24	....	...	124
June	39	24	63	0	12	12	87	33	36	45	123	27	99	30	27	15	57	S. 47 56 W.	.24	....	...	120
July	18	9	15	6	18	0	75	15	48	66	186	63	102	21	18	3	81	S. 43 23 W.	.52	....	...	124
August	24	24	87	0	21	0	66	6	33	30	228	39	99	6	0	0	78	S. 43 57 W.	.34	....	...	124
September	21	48	78	6	9	0	57	9	57	39	150	27	87	51	30	9	42	S. 63 30 W.	.27	....	...	120
October	72	56	84	16	24	8	36	16	56	44	160	16	76	12	32	4	32	S. 68 9 W.	.14	....	...	124
November	52	72	128	16	40	12	8	12	44	8	44	32	100	28	76	8	40	N. 17 1 W.	.25	....	...	120
December	96	48	0	0	24	0	48	48	48	36	132	60	48	24	48	60	24	S. 78 58 W.	.27	....	...	124
87. Aggregate for the entire period. Surface wind.																						
Spring	243	...	857	...	131	...	449	...	180	...	673	...	437	...	616	...	137	N. 44 20 W.	.12	N. 65° E.	.12	
Summer	153	...	418	...	96	...	442	...	238	...	1040	...	587	...	448	...	271	S. 60 53 W.	.29	S. 19 W.	.19	
Autumn	288	...	726	...	111	...	282	...	247	...	708	...	476	...	584	...	133	N. 61 38 W.	.16	N. 52 E.	.06	
Winter	392	...	463	...	97	...	288	...	265	...	687	...	469	...	1042	...	125	N. 64 44 W.	.31	N. 44 W.	.13	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 44 W.	.19			
Motion of clouds.																						
Spring	55	...	79	...	8	...	19	...	25	...	47	...	73	...	148	...	...	N. 42 53 W.	.43½	S. 76 E.	.12½	
Summer	2	...	15	...	0	...	7	...	0	...	27	...	59	...	61	...	...	N. 73 18 W.	.65	N. 64 W.	.23	
Autumn	16	...	31	...	2	...	5	...	8	...	21	...	41	...	45	..	...	N. 54 15 W.	.44	S. 61 E.	.06	
Winter	59	...	37	...	2	...	4	...	16	...	23	...	60	...	88	...	...	N. 43 45 W.	.54	N. 22 E.	.11	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 55 1 W.	.50			
The two combined.																						
Spring	298	...	936	...	139	...	468	...	205	...	720	...	510	...	764	...	137	N. 43 13 W.	.15	N. 62 E.	.12	
Summer	155	...	433	...	96	...	449	...	238	...	1067	...	646	...	509	...	271	S. 64 12 W.	.30	S. 19 W.	.20	
Autumn	304	...	757	...	113	...	287	...	255	...	729	...	517	...	629	...	133	N. 63 36 W.	.19	N. 51 E.	.05	
Winter	451	...	500	...	99	...	292	...	281	...	710	...	529	...	1130	...	125	N. 62 20 W.	.32	N 38 W.	.12	
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 37 W.	.21			

[1] Computed from the resultants for the seasons.

(Nos. 88 to 95.) **Atlantic Ocean.**

Computed from observations, for an aggregate period of over seven years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

(Nos. 88 to 95.) **Atlantic Ocean.**—*Continued.*

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
88. Longitude 45° to 65° W.																						
Spring	0	4	0	0	7	6	3	2	2	15	13	2	10	2	13	3	4	S. 54° 37′ W.	.31½	N. 88° W.	.04	29
Summer	3	14	2	19	12	9	5	14	18	41	46	39	20	13	8	16	10	S. 45 29 W.	.36	S. 29½ W.	.08	96
Autumn	3	6	7	6	8	9	6	13	7	10	14	13	8	7	11	5	2	S. 45 46 W.	.18	N. 56½ E.	.11	45
Winter	0	5	1	1	2	1	1	1	6	4	4	6	4	1	3	1	2	S. 51 46 W.	.29	N. 62 W.	.01	14
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 40 W.	.28½	....	...	184
88(*a*). Longitude 40° to 45° W.																						
Spring	2	2	1	16	5	10	3	9	5	10	14	9	9	17	11	12	4	S. 75 53 W.	.17	N. 38 E.	.12	47
Summer	3	10	3	12	13	7	7	15	20	32	37	54	20	12	21	18	20	S. 56 30 W.	.37½	S. 46 W.	.11	102
Autumn	4	5	4	9	11	9	4	10	11	13	17	18	21	26	9	9	7	S. 70 5 W.	.28	N. 33½ W.	.04½	63
Winter	3	0	6	4	4	10	8	10	6	11	7	16	5	10	8	5	1	S. 43 45 W.	.31	S. 15 E.	.09	38
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 41 W.	.27½	....	...	250
89. Longitude 35° to 40° W.																						
Spring	5	5	13	14	15	9	5	11	8	15	21	30	18	14	12	12	10	S. 66 25 W.	.19	N. 57 E.	.17	72
Summer	2	9	8	11	20	19	7	32	26	29	56	41	36	40	21	12	19	S. 50 25 W.	.36	S. 33½ E.	.07	130
Autumn	13	12	2	4	7	9	5	8	15	22	18	22	32	38	18	20	9	S. 84 38 W.	.55	N. 63 W.	.26	84
Winter	0	2	2	5	7	10	7	17	16	22	12	30	18	16	7	6	8	S. 40 22 W.	.42	S. 13 E.	.16	62
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 10 W.	.32	....	...	348
90. Longitude 30° to 35° W.																						
Spring	8	11	16	14	8	22	7	6	15	24	39	30	25	21	12	13	12	S. 61 48 W.	.24	S. 68 E.	.09	94
Summer	13	8	9	12	8	9	6	17	22	40	30	44	37	39	18	16	15	S. 77 41 W.	.36	N. 85½ W.	.05	114
Autumn	15	16	4	8	10	6	8	12	26	16	24	25	19	42	24	21	9	N. 83 3 W.	.30	North	.11½	95
Winter	7	14	4	4	12	10	7	13	17	36	22	25	33	31	12	14	7	S. 66 24 W.	.34	S. 14 W.	.06	87
The year[1]	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	...	S. 74 42 W.	.31	....	...	390
91. Longitude 25° to 30° W.																						
Spring	36	26	4	18	10	18	6	13	11	28	28	45	40	20	19	26	18	N. 78 38 W.	.25	N. 59 E.	.16	122
Summer	16	6	7	9	3	9	9	21	22	36	34	38	43	28	14	24	11	S. 67 11 W.	.39	S. 27 W.	.07	110
Autumn	10	8	8	4	4	2	2	13	17	26	14	21	23	26	23	23	13	S. 89 16 W.	.37	N. 26 W.	.09½	79
Winter	5	6	3	2	11	6	7	12	24	38	22	39	24	25	15	10	13	S. 55 40 W.	.44	S. 12½ W.	.16½	87
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 1 W.	.34	....	...	398
92. Longitude 20° to 25° W.																						
Spring	21	11	9	15	19	14	8	29	19	31	28	34	20	26	32	23	13	S. 72 4 W.	.19	S. 82 E.	.11½	117
Summer	7	9	5	12	10	8	4	23	13	26	40	55	51	44	30	25	28	S. 80 1 W.	.43	S. 77 W.	.13	130
Autumn	14	10	9	10	12	5	8	13	13	15	12	22	41	27	17	23	3	N. 79 37 W.	.30	N. 1½ E.	.10	85
Winter	10	11	3	11	4	8	10	8	12	26	21	18	23	25	15	8	6	S. 71 26 W.	.30	S. 13½ E.	.05½	73
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 33 W.	.30	....	...	405
93. Longitude 15° to 20° W.																						
Spring	6	11	16	13	9	11	14	12	18	21	25	37	14	30	26	27	11	S. 84 5 W.	.23	N. 86½ E.	.08	100
Summer	18	16	9	15	5	6	6	16	16	29	23	57	30	47	24	23	17	S. 89 32 W.	.37	N. 68 W.	.07	179
Autumn	17	10	5	7	7	7	10	18	8	20	11	19	23	20	18	21	3	N. 85 25 W.	.24	N. 54 E.	.08½	75
Winter	6	4	3	4	2	9	1	10	18	20	15	25	19	27	15	13	5	S. 73 12 W.	.42	S. 46 W.	.13	65
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	S. 84 48 W.	.31	....	...	419
94. Longitude 0° to 15° W.																						
Spring	18	16	24	20	17	24	21	21	27	37	23	24	18	31	17	20	7	S. 26 47 W.	.09	S. 53 E.	.14	122
Summer	30	35	27	32	24	13	7	8	19	41	36	65	56	68	45	52	17	N. 65 38 W.	.31	N. 46 W.	.18	192
Autumn	10	12	9	19	16	14	14	18	18	19	24	35	26	31	23	19	8	S. 70 55 W.	.19	S. 24½ W.	.07	105
Winter	8	14	14	11	6	4	9	8	18	21	13	17	21	21	18	19	3	N. 84 16 W.	.22	N. 73 W.	.07	75
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 17 W.	.15	....	...	494

[1] Computed from the resultants for the seasons.

(Nos. 88 to 95.) **Atlantic Ocean.**—*Continued.*

Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
	Relative Prevalence of Winds from the Different Points of the Compass.																					
95. Longitude 0° to 65° W.																						
January	15	16	7	11	16	24	21	26	36	62	29	64	50	46	32	20	18	S. 60° 25′ W.	.32	S. 12° W.	.09	164
February	14	23	19	18	20	27	20	33	46	64	53	63	49	54	33	33	20	S. 52 59 W.	.28	S. 26 E.	.10	200
March	13	22	27	40	28	24	18	18	29	50	59	62	48	54	52	31	8	S. 78 59 W.	.23	N. 49 E.	.04	194
April	43	27	15	24	26	37	21	37	29	58	40	61	44	48	48	54	35	S. 86 42 W.	.18	N. 52 E.	.10	216
May	40	37	41	46	36	53	28	48	47	73	92	88	62	59	42	51	36	S. 59 28 W.	.17	S. 83 E.	.11	293
June	24	22	27	42	45	30	13	55	87	123	136	135	136	105	74	74	55	S. 63 36 W.	.34	S. 30½ W.	.09	394
July	22	41	28	40	23	27	13	56	29	67	67	126	81	100	50	39	37	S. 78 32 W.	.32	N. 80 W.	.05	282
August	46	44	15	40	27	23	25	35	40	85	99	134	76	86	57	74	41	S. 81 45 W.	.33	N. 68 W.	.07	316
September	24	28	21	32	29	27	27	44	53	61	39	50	54	71	39	47	20	S. 65 31 W.	.19	S. 87 E.	.09	222
October	45	35	17	26	36	24	24	43	39	55	44	64	70	84	67	69	19	N. 82 13 W.	.27	N. 5 W.	.11	254
November	17	16	10	9	10	10	6	18	23	25	51	60	69	62	37	25	15	N. 89 8 W.	.33	N. 43 W.	.11	154
December	10	17	10	13	5	7	9	20	35	50	34	47	48	56	28	23	7	S. 72 52 W.	.41	S. 70 W.	.14	140
The year	313	328	237	341	311	313	225	433	493	773	743	954	787	825	559	540	311	S. 74 19 W.	.27	....	...	2829

(Nos. 96 and 97.) **Channel Islands, Great Britain.**

Observed at the following places, viz.:—

Guernsey, during the years 1867 and 1868.

Millbrook, by P. Langlois, for an aggregate period of 47 months in the years 1864 to 1868 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.													
96. Guernsey.	The year	193	...	137	...	174	...	227	...	...	N. 78° 5′ W.	.12			
97. Millbrook.	Spring	18	61	39	25	44	58	44	21	27	S. 0 6 W.	.07½	N. 67° E.	.11	338
	Summer	18	67	22	14	38	71	83	35	21	S. 84 12 W.	.21½	N. 50 W.	.15	369
	Autumn	8	54	33	25	49	73	46	25	22	S. 25 54 W.	.18	S. 27½ E.	.05	333
	Winter	20	43	27	44	69	77	57	28	25	S. 26 52 W.	.24	S. 4 W.	.09½	390
	The year[1]	...	...	...	...	...	...	...	...	...	S. 39 58 W.	.15½	....		1430

[1] Computed from the resultants for the seasons.

(Nos. 98 to 165.) **Middle France.**

Observed at the following places, viz.:—

Ahun, by Midre and Aristide Charière, during the years 1842 to 1865 inclusive.

Angers, by Meniere, during the years 1852, 1853, 1854; and from 1780 to 1790 inclusive, name of observer not preserved.

Arbresle, by Romand, during the years 1860 to 1865 inclusive.

Beaujeu, by Chinard, during the years 1860 to 1865 inclusive.

Besancon, by Jannot, during the years 1863 to 1865 inclusive.

Blois, by Blondin, during the years 1859 to 1861 inclusive.

Bourbonne, by Poutot, during the year 1863.

Bourg, by Jarrin, during the years 1853, 1854, and 1863 to 1865 inclusive.

Brest, by Belleville, during the year 1859.

(Nos. 98 to 165.) **Middle France.**—*Continued.*

Cercie, by Berthier, during the years 1860 to 1865 inclusive.
Chalons, by Thevenin, during the year 1864.
Cherbourg, by ——— during one year; date not preserved.
Clermont Ferrand, by Lecoq, during the years 1850, 1851 and 1813.
Clermont Oise, by Dr Rottec, during the years 1853 to 1860 inclusive.
Courçon, by Vincent, during the years 1851 and 1852.
Cublize, by Forneaux, during the years 1860 to 1865 inclusive.
Denainvilliers, during the years 1748 to 1778 inclusive.
Dijon, by Perrey, during the years 1845 to 1853 inclusive, and 1859.
Dole, by Domin, during the years 1863, 1864 and 1865
Doulevant, by Pissof, during the year 1859.
Duerne, by Gorges, during the years 1860 to 1865 inclusive.
Du Puy, by de Doue, during the years 1849 to 1853 inclusive.
Fecamp, by Marchand, during the years 1853 to 1859.
Fort-de-Joux, by Bassand, during the years 1863, 1864 and 1865.
Givors, by Laroche and others, during the years 1860 to 1865
Goersdoff, by l'Abbe Muller, during the years 1849 to 1855 inclusive, and 1859.
Gray, by Fourton, during the years 1863, 1864 and 1865.
Ichtratzheim, by l'Abbe Muller, during the years 1860, 1862 and 1863.
La Chapelle, by Racine and Nell de Breante, during the year 1847.
La Fleche, by de Sainthillier, during the year 1852.
La Saulsaie, by F. Pourain, during the years 1850 to 1857 inclusive.
Lons-le-Saulnier, by Bauquerre, during the years 1863, 1864 and 1865.
Lyons, by Drian, during the years 1863 to 1865 inclusive.
Metz, by Schuster, during the year 1847.
Monsol, by Forest, during six months in the year 1865.
Montbeliard, by Queney, during the years 1863, 1864 and 1865.
Montmorenci, during the years 1768 to 1782 inclusive.
Nancy, during the years 1775 to 1780 inclusive.
Nantes, by F. Huette, during the years 1854 to 1860 inclusive.
Nemours, by Dr. Goupil, during the year 1852.
Paris, at the Observatory, during the years 1806 to 1845 inclusive.
Rouen, by Preisser, during the years 1845, 1846, 1848, 1849, 1853, 1854, 1856 and 1857.
Rousses, by Simon, during the years 1862 to 1865 inclusive.
St. Foy, by Broalier, during the years 1860 to 1865 inclusive.
St. Laurent d'Oingt, by Chabert, during the years 1860 to 1865 inclusive.
St. Lo, by Lamarck, during the years 1844, 1845 and 1846.
St. Nizier, by Chassagne, during the years 1860 to 1865.
St. Rambert, by Sauvanau, during the years 1838 to 1843 inclusive.
Strassburg, during a period of twenty years; date not preserved.
Syam, by Thorel, during the years 1845 to 1849 inclusive.
Tarare, by Desroches, during the years 1860 to 1866 inclusive.
Valognes, by Benoist, during the year 1847.
Vendome, by Renou, during the years 1859, 1862 and 1863.
Verdun, by Dubois, during the year 1865.
Versailles, by Berigny, during the years 1847 to 1855 inclusive, 1857, 1858, 1862 to 1865 inclusive, and 1867.
Vesoul, by Mellasseau, during the years 1863, 1864 and 1865.

(Nos. 98 to 112.)

Middle France.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
98. Brest.	Spring	12	1	19	0	1	0	1	0	3	5	19	0	4	1	8	4	14	N. 39° 47′ W.?	.20	N. 18° E.	.18	92
	Summer	3	2	14	0	3	0	0	0	5	9	13	2	8	1	6	7	19	N. 81 20 W.?	.18½	N. 2 E.	.05	92
	Autumn	4	2	4	0	9	2	4	1	3	6	24	2	9	0	3	4	14	S. 44 38 W.?	.25	S. 2½ E.	.15½	91
	Winter	2	2	4	3	7	0	8	1	2	2	22	4	10	3	10	3	7	S. 68 5 W.?	.26	S. 37½ W.	.09½	90
	The year	21	7	41	3	20	2	13	2	13	22	78	8	31	5	27	18	54	S. 83 2 W.	.18½	....	...	365
99. Nantes.	Spring	84	...	68	...	143	...	29	...	81	...	53	...	144	...	40	...	0	N. 4 54 E.	.03½	N. 32 E.	.03½	644
	Summer	93	...	48	...	96	...	31	...	75	...	47	...	193	...	41	...	0	N. 76 60 W.	.17	N. 77 W.	.15½	644
	Autumn	75	...	66	...	147	...	26	...	105	...	48	...	130	...	28	...	0	S. 60 45 E.	.05	S. 62 E.	.06½	637
	Winter	82	...	53	...	147	...	30	...	102	...	57	...	101	...	39	...	0	S. 65 55 E.	.06½	S. 66 E.	.08	632
	The year	334	...	235	...	533	...	116	...	363	...	205	...	568	...	148	...	0	N. 67 50 W.	.01½	....	...	2557
100. Cherbourg.	Spring	3	...	16	...	4	...	3	...	5	...	19	...	13	...	29	...	0	N. 64 13 W.	.36	....	...	92
	Summer	2	...	23	...	1	...	1	...	5	...	25	...	11	...	24	...	0	N. 66 54 W.	.33	....	...	92
	Autumn	12	...	24	...	1	...	1	...	9	...	16	...	5	...	23	...	0	N. 29 52 W.	.30	....	...	91
	Winter	1	...	7	...	8	...	16	...	8	...	30	..	5	...	15	...	0	S. 27 39 W.	.30	....	...	90
	The year	18	...	70	...	14	...	21	...	27	...	90	...	34	...	91	...	0	N. 72 31 W.	.24	....	...	365
101. Valognes.	Spring	12	...	9	...	10	...	3	...	8	...	15	...	24	...	11	...	0	N. 77 15 W.	.26½	....	...	92
	Summer	8	...	14	...	21	...	0	...	1	...	12	...	14	...	22	...	0	N. 16 35 W.	.27	....	...	92
	Autumn	12	...	2	...	8	...	0	...	9	...	15	...	43	...	2	...	0	S. 84 1 W.	.50	....	...	91
	Winter	14	...	5	...	12	...	2	...	15	...	18	...	14	...	10	...	0	S. 74 58 W.	.19½	....	...	90
	The year	46	...	30	...	51	...	5	...	33	...	60	...	95	...	45	...	0	N. 77 53 W.	.26½	....	...	365
102. Saint Lo.[1]	Spring	12	17	38	6	10	3	2	3	3	11	6	9	15	12	4	12	48	N. 4 38 E.	.23½	....	...	92
	Summer	21	10	13	3	4	4	5	7	7	8	5	20	22	16	17	14	61	N. 55 7 W.	.25½	....	...	92
	Autumn	5	7	14	15	10	6	4	5	5	18	14	10	15	4	10	8	47	S. 76 6 W.	.04½	....	...	91
	Winter	8	19	6	13	10	11	8	5	8	4	12	8	9	8	7	15	44	N. 20 41 E.	.10	....	...	91
	The year	130	106	197	98	96	39	59	62	97	101	165	141	211	98	110	108	200	N. 57 38 W.	.14	....	...	1096
103. Courçon.	Spring	28	...	58	...	7	...	7	...	26	...	16	...	21	...	21	...	0	N. 7 56 E.	.23	....	...	184
	Summer	45	...	24	...	4	...	2	...	27	...	27	...	38	...	17	...	0	N. 60 27 W.	.29	....	...	184
	Autumn	35	...	39	...	1	...	4	...	47	...	16	...	16	...	27	...	0	N. 36 9 W.	.14	....	...	182
	Winter	27	...	26	...	4	...	14	...	47	...	13	...	34	...	20	...	0	S. 75 19 W.	.14	....	...	181
	The year	135	...	147	...	16	...	27	...	147	...	72	...	109	...	85	...	0	N. 44 38 W.	.16	....	...	731
104. Angers, 1852, 1853 and 1854.	Spring	27	12	36	10	48	16	18	3	7	2	15	14	35	12	15	6	0	N. 38 4 E.	.19	N. 65 E.	.29	276
	Summer	24	8	16	6	15	8	9	3	13	3	29	40	70	8	21	3	0	N. 88 58 W.	.37	S. 85 W.	.23	276
	Autumn	15	8	27	6	32	12	20	12	16	8	23	19	49	11	14	1	0	S. 43 3 W.	.09	S. 41 E.	.12	273
	Winter	17	9	13	6	27	14	12	10	15	3	16	19	75	25	20	5	0	N. 85 32 W.	.26	S. 86 W.	.12	271
	The year	83	37	92	28	122	50	59	28	51	16	83	92	199	56	70	15	0	N. 76 28 W.	.12½	....	...	1096
105. Angers, 1780–90.	The year	868	89	267	27	188	35	209	79	860	104	430	58	421	77	260	44	0	S. 75 42 W.	.11½	....	...	4016
106. Fecamp.	Spring	25	13	41	19	155	8	42	8	44	13	46	8	138	22	53	15	0	N. 10 37 E.	.00	....	...	644
	Summer	23	17	36	16	87	4	15	7	37	13	30	7	203	42	91	16	0	N. 69 9 W.	.32	....	...	644
	Autumn	21	4	33	6	152	10	54	16	84	15	66	5	105	6	57	7	0	S. 13 44 E.	.18	....	...	637
	Winter	16	7	21	11	133	15	60	13	81	40	65	11	98	7	47	17	0	S. 2 40 E.	.21	....	...	631
	The year	85	41	131	52	527	37	171	44	246	81	207	31	544	77	248	55	0	S. 44 45 W.	.09	....	...	2556
107. La Chapelle.	Spring	9	...	10	...	9	...	3	...	12	...	13	...	26	...	3	...	0	S. 75 0 W.?	.23½	....	...	92
	Summer	15	...	13	...	4	...	2	...	3	...	9	...	17	...	12	...	1	N. 38 13 W.?	.36½	....	...	92
	Autumn	4	...	6	...	8	...	1	...	5	...	19	...	13	...	3	...	3	S. 60 39 W.?	.29	....	...	91
	Winter	6	...	4	...	17	...	9	...	18	...	8	...	13	...	4	...	4	S. 14 23 E.?	.23	....	...	90
	The year	34	...	33	...	38	...	15	...	38	...	49	...	69	...	22	...	8	S. 77 38 W.	.16	....	...	365
108. Rouen.	Spring	79	34	88	6	57	5	25	24	37	41	91	18	101	22	87	26	0	N. 56 2 W.	.19½	....	...	736
	Summer	38	23	78	3	49	1	8	18	57	78	118	16	122	29	39	16	0	S. 68 18 W.	.29	....	..	736
	Autumn	41	16	71	4	83	4	43	12	41	39	147	13	110	9	70	11	0	S. 58 56 W.	.16	....	...	728
	Winter	104	19	88	19	40	0	12	19	20	31	77	5	165	10	76	24	0	N. 49 9 W.	.32½	....	...	722
	The year	262	92	325	32	229	10	88	73	155	189	433	52	498	70	272	77	0	N. 81 27 W.	.21	....	...	2922
109. Nos. 106, 107 & 108 combined.	Spring	113	47	139	25	221	13	70	32	93	54	150	26	265	44	143	41	0	N. 60 59 W.	.11	N. 35 E.	.08½	
	Summer	76	40	127	19	140	5	25	25	97	91	157	23	342	71	142	32	1	N. 86 34 W.	.28	N. 76½ W.	.14	
	Autumn	66	20	110	10	243	14	98	28	130	54	232	18	228	15	130	18	3	S. 33 20 W.	.14½	S. 31 E.	.12½	
	Winter	126	26	113	30	190	15	81	32	119	71	150	16	276	17	127	41	4	S. 85 17 W.	.12	N. 76½ E.	.03	
	The year	381	133	489	84	794	47	274	117	439	270	689	83	1111	147	542	132	8	S. 84 0 W.	.14			
110. Nos. 100, 101 & 102 combined.	Spring	27	17	63	6	24	3	8	3	16	11	40	9	52	12	44	12	48	N. 35 40 W.	.21½	N. 12 E.	.09	
	Summer	31	10	50	3	26	4	6	7	13	8	42	20	47	16	63	14	61	N. 50 10 W.	.26	N. 35 W.	.09½	
	Autumn	29	7	40	15	19	6	5	5	23	18	45	10	63	4	35	8	47	N. 77 9 W.	.18½	S. 40½ W.	.06½	
	Winter	23	19	18	13	30	11	26	5	31	4	60	8	28	8	32	15	44	S. 66 59 W.	.06½	S. 35 E.	.14½	
	The year	110	53	171	37	99	24	45	20	83	41	187	47	190	40	174	49	200	N. 56 44 W.	.17			
111. Vendome.	Spring	4	7	17	21	39	11	6	2	8	7	25	11	61	24	24	8	0	N. 69 6 W.	.17½	....	...	276
	Summer	14	3	23	9	32	7	11	1	11	3	14	18	63	23	27	10	0	N. 63 8 W.	.26	....	...	276
	Autumn	6	7	13	6	43	17	11	5	18	15	30	16	47	23	11	4	0	S. 44 41 W.	.17½	....	...	273
	Winter	6	4	13	16	49	11	7	2	8	12	35	25	57	17	11	7	0	S. 67 35 W.	.42	....	...	270
	The year	30	21	66	52	163	46	35	10	45	37	104	70	228	87	73	29	0	S. 88 57 W.	.17	....	...	1095
112. Blois.	Spring	41	17	13	10	32	2	2	5	19	12	41	13	42	5	12	10	0	N. 66 25 W.	.17	....	...	276
	Summer	27	5	12	2	26	3	8	1	27	19	41	21	55	9	13	5	0	S. 69 25 W.	.32½	....	...	276
	Autumn	19	7	10	11	49	9	7	3	47	23	35	7	40	3	3	5	0	S. 3 13 W.	.22½	....	...	273
	Winter	37	5	20	7	36	4	5	4	51	24	30	7	23	2	7	9	0	S. 4 50 W.	.12½	....	...	271
	The year	124	34	55	30	143	18	22	13	144	78	147	48	160	19	35	29	0	S. 50 36 W.	.15½	....	...	1096

[1] Seasons for 1844 only.

(Nos. 113 to 123.) **Middle France.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																			
113. 111 & 112 comb'd.	Spring	45	24	30	31	71	13	8	7	27	19	66	24	103	29	36	18	0	N. 67° 42′ W.	.17	552
	Summer	41	8	35	11	58	10	19	2	38	22	55	39	118	32	40	15	0	N. 89 48 W.	.27	552
	Autumn	25	14	23	17	92	26	18	8	65	38	65	23	87	26	14	9	0	S. 20 53 W.	.19	546
	Winter	43	9	33	23	85	15	12	6	59	36	65	32	80	19	18	16	0	S. 42 44 W.	.13	541
	The year	154	55	121	82	306	64	57	23	189	115	251	118	388	106	108	58	0	S. 70 42 W.	.15	2191
114. Ahun.	Spring	300.37	...	439.05	...	151.99	...	78.57	...	192.00	...	450.18	...	363.52	...	233.53	...	0	N. 52 15 W.	.17½	2208
	Summer	280.93	...	379.84	...	103.06	...	50.15	...	107.72	...	511.26	...	469.46	...	314.32	...	0	N. 67 29 W.	.31	2208
	Autumn	180.20	...	387.93	...	190.85	...	118.87	...	281.97	...	632.57	...	247.21	...	156.41	...	0	S. 45 22 W.	.16	2184
	Winter	207.51	...	337.97	...	230.13	...	136.30	...	302.05	...	542.99	...	226.91	...	168.72	...	0	S. 35 14 W.	.12	2165
	The year	969.01	...	1544.79	...	676.03	...	383.89	...	883.74	...	2137.00	...	1307.10	...	872.98	...	0	N. 89 30 W.	.16	8765
115. Versailles.	Spring	263	152	256	108	275	59	120	38	151	125	232	97	412	124	154	106	0	N. 37 51 W.	.13	1472
	Summer	284	133	182	104	183	54	87	37	130	32	300	163	551	165	234	84	0	N. 71 9 W.	.29½	1472
	Autumn	225	94	185	117	347	77	88	70	248	146	268	134	356	202	128	72	6	S. 76 46 W.	.09½	1456
	Winter	162	81	129	91	203	58	90	62	187	127	284	127	456	114	140	51	0	S. 73 48 W.	.22	1443
	The year	934	460	752	420	1008	248	385	207	716	430	1084	521	1775	605	656	313	6	N. 80 28 W.	.16	5843
116. Paris.	January	111	35	120	24	59	24	98	48	142	52	159	58	140	38	84	24	24	S. 50 55 W.	.14½	1240
	February	90	29	77	26	46	20	82	41	166	66	136	52	145	51	77	25	7	S. 59 04 W.	.20½	1130
	March	120	40	189	27	58	20	57	23	112	56	160	48	159	58	83	24	6	N. 76 07 W.	.13½	1240
	April	138	57	127	56	64	21	62	25	132	47	123	32	129	48	101	33	5	N. 51 42 W.	.10	1200
	May	114	48	118	52	70	20	79	29	121	51	170	59	132	45	88	38	6	S. 79 26 W.	.11	1240
	June	131	27	122	23	43	19	47	27	75	44	185	65	190	58	114	24	6	N. 83 00 W.	.27	1200
	July	97	20	92	20	40	12	48	12	98	53	185	94	230	79	125	25	10	S. 85 49 W.	.37	1240
	August	93	14	92	26	55	15	37	17	111	49	211	70	245	53	117	19	10	S. 79 27 W.	.34½	1240
	September	97	20	120	45	71	20	62	30	152	52	192	49	135	39	87	22	7	S. 53 46 W.	.17	1200
	October	76	21	88	51	72	16	94	55	186	61	175	48	148	50	92	16	11	S. 37 29 W.	.24	1240
	November	58	17	93	19	59	25	91	39	167	60	222	57	153	31	86	14	9	S. 39 25 W.	.30	1200
	December	62	30	118	33	59	27	95	27	161	64	211	69	131	40	82	17	14	S. 39 15 W.	.24	1240
	Spring	372	145	434	135	192	61	198	77	365	154	453	139	420	151	272	95	17	N. 77 26 W.	.11	3680
	Summer	321	61	306	69	138	46	132	56	285	146	581	229	665	190	356	68	26	S. 81 22 W.	.33½	3680
	Autumn	231	58	301	95	202	61	247	124	505	173	589	154	436	120	265	52	27	S. 42 5 W.	.23½	3640
	Winter	173	94	315	83	164	71	275	116	469	182	506	179	416	129	243	66	45	S. 41 12 W.	.22½	3610
	The year	1097	358	1356	382	696	239	852	373	1623	655	2129	701	1937	590	1136	281	115	S. 67 23 W.	.22	14610
117. Montmorenci.	Spring	21	0	15	0	10	0	3	0	8	0	13	0	11	0	11	0	0	N. 37 14 W.	.29	1380
	Summer	19	0	13	0	8	0	2	0	8	0	13	0	18	0	14	0	0	N. 43 29 W.	.29	1380
	Autumn	12	0	10	0	9	0	4	0	17	0	18	0	12	0	11	0	0	S. 8 21 W.	.17	1365
	Winter	15	0	13	0	12	0	3	0	11	0	16	0	13	0	9	0	0	N. 50 15 W.	.10	1352
	The year	67	0	51	0	39	0	12	0	44	0	60	0	54	0	45	0	0	N. 48 11 W.	.14	5477
118. 115–117 comb'd.[1]	Spring	656	297	705	243	477	120	321	115	524	279	698	236	843	275	437	201	17	N. 58 6 W.	.11	
	Summer	624	194	501	173	329	100	221	93	423	178	894	410	1216	369	590	152	26	N. 82 5 W.	.30	
	Autumn	468	152	496	212	558	138	339	194	770	319	875	288	804	322	404	124	33	S. 49 54 W.	.18	
	Winter	350	175	457	174	379	129	368	178	667	309	806	306	885	243	392	117	45	S. 54 24 W.	.21	
	The year	2098	818	2159	802	1743	487	1249	580	2384	1085	3273	1240	3748	1209	1823	594	121	S. 79 44 W.	.17½	
119. Nemours.	Spring	1	0	16	41	0	0	0	1	0	2	13	14	0	2	2	0	0	N. 61 12 E.?	.29	92
	Summer	2	1	5	22	0	0	0	0	0	0	14	39	0	2	6	1	0	S. 81 52 W.?	.31	92
	Autumn	0	1	6	10	0	0	0	0	0	1	4	65	0	1	3	0	0	S. 71 55 W.?	.60	91
	Winter	1	4	4	1	0	0	0	0	0	1	4	62	0	4	2	7	1	S. 80 51 W.	.70	91
	The year	4	6	31	74	0	0	0	1	0	4	35	180	0	9	13	8	1	S. 81 17 W.	.33	366
120. Clermont Ferrand.	Spring	34	32	12	8	25	8	5	10	45	14	15	8	51	5	10	10	6	N. 18 46 W.	.02	276
	Summer	28	23	14	16	30	10	6	10	34	5	7	19	62	1	10	8	7	N. 54 21 W.	.07	276
	Autumn	25	22	19	19	27	16	3	7	43	7	7	13	54	7	5	12	1	N. 13 41 W.	.03½	273
	Winter	40	26	14	12	20	18	12	9	26	7	4	14	50	4	6	11	5	N. 2 7 W.	.11	270
	The year	127	103	59	55	102	52	26	36	148	33	33	54	217	17	31	41	19	N. 36 18 W.	.06	1095
121. Denainvilliers.	Spring	31	...	32	...	3	...	2	...	0	...	21	...	35	...	3	...	4	N. 20 51 W.	.08	2852
	Summer	21	...	16	...	1	...	1	...	0	...	30	...	55	...	4	...	8	S. 48 19 W.	.35	2852
	Autumn	28	..	25	...	7	...	2	...	0	...	30	...	42	...	0	...	3	S. 23 18 W.	.11	2821
	Winter	15	...	28	...	10	...	1	...	0	...	40	...	21	...	0	...	1	S. 26 31 E.	.29	2798
	The year	95	...	101	...	21	...	6	...	0	...	121	...	163	...	7	...	16	S. 30 27 W.	.14	11323
122. Doulevant.	Spring	17	0	5	0	2	0	1	0	9	0	35	0	9	0	14	0	0	S. 83 52 W.?	.42	92
	Summer	26	0	7	0	2	0	5	0	6	0	22	1	8	0	12	1	0	N. 56 57 W.?	.46½	92
	Autumn	8	0	1	0	4	0	5	0	17	0	38	0	5	0	7	1	0	S. 41 25 W.?	.51	91
	Winter	22	0	5	0	3	0	5	0	19	0	21	0	5	0	8	0	0	S. 68 9 W.?	.19	90
	The year	73	0	18	0	11	0	16	0	51	0	116	1	27	0	41	2	0	S. 74 33 W.?	.31	365
123. Clermont Oise.	Spring	119	3	90	1	47	0	33	0	100	1	122	2	133	2	91	2	0	N. 74 47 W.	.21	736
	Summer	86	1	41	0	33	1	34	1	84	8	162	16	146	2	120	1	0	S. 82 50 W.	.38	736
	Autumn	75	2	86	0	57	1	65	2	144	1	128	2	94	0	68	1	0	S. 45 2 W.	.13	728
	Winter	92	3	44	0	36	0	78	1	126	16	119	0	108	1	93	1	0	S. 58 7 W.	.23	722
	The year	372	9	261	1	173	2	210	4	454	26	531	20	481	5	372	5	0	S. 72 33 W.	.20½	2922

[1] Nos. 115–117 combined. Monsoon influences: Spring N. 42½° E., .13; Summer N. 58½° W., .14; Autumn S. 23½° E., .09; Winter S. 3° E., .09.

(Nos. 124 to 134.)

Middle France.—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative prevalence of winds from the different points of the compass.																					
124. Metz.	The year	188	88	56	60	144	12	72	64	124	76	92	100	224	68	44	48	0	N. 83° 19′ W.	.12½	....	...	365
125. Nancy.	Spring	12	...	40	...	4	...	0	...	0	...	0	...	24	...	12	...	8	N. 4 40 W.	.29	....	...	552
	Summer	8	...	36	...	0	...	0	...	0	...	4	...	32	...	32	...	0	N. 78 54 W.	.32	....	...	552
	Autumn	0	...	24	...	8	...	0	...	0	...	20	...	44	...	16	...	8	S. 44 19 W.	.33	....	...	546
	Winter	0	...	48	...	4	...	0	...	0	...	4	...	44	...	24	...	4	N. 85 18 W.	.17	....	...	541
	The year	20	...	148	...	16	...	0	...	0	...	28	...	140	...	72	...	20	N. 79 38 W.	.15	....	...	2191
126. Nos. 123, 124 & 125 combined.	Spring	131	3	130	1	51	0	33	0	100	1	122	2	157	2	103	2	8	N. 59 48 W.	.21	N. 19½°E.	.12	1104
	Summer	94	1	77	0	33	1	34	1	84	8	166	16	178	2	152	1	0	N. 86 37 W.	.36½	N. 79½ W.	.15	1104
	Autumn	75	2	110	0	65	1	65	2	144	1	148	2	138	0	84	1	8	S. 53 20 W.	.17	S. 40 E.	.13	1092
	Winter	92	3	92	0	40	0	78	1	126	16	123	0	152	1	117	1	4	S. 76 19 W.	.20½	S. 27 E.	.05	1083
	The year	580	97	465	61	333	14	282	68	578	102	651	120	845	73	488	53	20	S. 89 9 W.	.17½	....	...	4748
127. Du Puy. Surface wind.	Spring	166	110	50	3	8	2	35	38	93	36	110	35	147	90	168	105	0	N. 53 36 W.	.39	....	...	460
	Summer	117	73	22	1	5	2	19	13	43	100	126	124	204	126	151	118	0	N. 75 32 W.	.53	....	...	460
	Autumn	223	110	54	15	6	10	25	24	97	38	112	87	129	103	160	92	0	N. 50 9 W.	.38½	....	...	455
	Winter	228	123	54	8	4	2	17	22	54	27	50	48	115	93	267	110	0	N. 36 33 W.	.55	....	...	451
	The year	734	416	180	27	23	16	96	97	287	201	398	294	595	412	746	425	0	N. 55 29 W	.45	....	...	1826
Motion of clouds.	Spring	76	54	262	8	7	6	207	36	79	16	76	19	97	55	289	56	0	N. 14 41 W.	.19	....		
	Summer	220	184	115	8	15	9	94	36	116	22	57	21	155	40	177	102	0	N. 8 19 W.	.31	....		
	Autumn	146	189	95	10	7	13	107	42	161	20	76	28	146	28	186	83	0	N. 33 23 W.	.22	....		
	Winter	76	38	147	5	9	13	132	53	152	25	104	29	98	69	295	62	0	N. 67 27 W.	.20½	....		
	The year	518	465	619	31	38	41	540	167	508	83	313	97	496	192	947	303	0	N. 30 1 W.	.24	....		
Aggregate.	Spring	242	164	312	11	15	8	242	74	172	52	186	51	244	145	457	161	0	N. 40 15 W.	.27	....		
	Summer	337	257	137	9	20	11	113	49	159	122	183	145	359	166	328	220	0	N. 36 13 W.	.39	....		
	Autumn	369	299	149	25	13	23	132	66	258	58	188	115	275	131	346	175	0	N. 45 25 W.	.31	....		
	Winter	304	161	201	13	13	15	149	75	266	52	154	77	213	162	562	172	0	N. 45 11 W.	.36	....		
	The year	1252	881	799	58	61	57	636	264	795	284	811	391	1091	604	1693	728	0	N. 48 27 W.	.33	....		
128. Cercie.	Spring	141	...	10	...	21	...	30	...	169	...	37	...	44	...	98	...	0	N. 89 22 W.	.11½	....	...	552
	Summer	76	...	7	...	21	...	26	...	155	...	82	...	76	...	109	...	0	S. 66 8 W.	.33	....	...	552
	Autumn	87	...	5	...	5	...	36	...	184	...	72	...	46	...	94	...	0	S. 51 24 W.	.31½	....	...	546
	Winter	162	...	5	...	4	...	57	...	150	...	56	...	27	...	81	...	0	S. 84 40 W.	.14	....	...	542
	The year	466	...	27	...	51	...	149	...	658	...	247	...	193	...	382	...	0	S. 68 26 W.	.23	....	...	2192
129. Duerne.	Spring	164	...	75	...	59	...	31	...	114	...	14	...	50	...	43	...	0	N. 23 15 E.	.20	....	...	552
	Summer	188	...	66	...	39	...	20	...	121	...	21	...	32	...	65	...	0	N. 3 4 E.	.24	....	...	552
	Autumn	108	...	74	...	68	...	8	...	209	...	19	...	15	...	44	...	0	S. 61 8 E.	.14	....	...	546
	Winter	127	...	60	...	84	...	34	...	139	...	8	...	30	...	60	...	0	N. 59 12 E.	.16	....	...	542
	The year	587	...	275	...	250	...	93	...	583	...	62	...	127	...	212	...	0	N. 38 26 E.	.14	....	...	2192
130. Arbresle.	Spring	99	...	8	...	57	...	29	...	118	...	18	...	75	...	20	...	0	S. 29 59 W.	.09	....	...	552
	Summer	110	...	6	...	51	...	11	...	105	...	26	...	96	...	13	...	0	S. 82 44 W.	.15	....	...	552
	Autumn	56	...	13	...	88	...	18	...	116	...	42	...	55	...	16	...	0	S. 9 38 E.	.20½	....	...	546
	Winter	62	...	12	...	79	...	34	...	82	...	28	...	56	...	18	...	0	S. 28 21 E.	.13	....	...	542
	The year	327	...	39	...	275	...	92	...	421	...	114	...	282	...	67	...	0	S. 14 26 W.	.10½	....	...	2192
131. Tarare.	Spring	153	0	32	1	27	6	30	4	104	2	38	1	25	1	99	5	0	N. 27 30 W.	.19½	....	...	644
	Summer	153	0	22	0	13	2	18	0	60	1	74	1	49	3	120	10	0	N. 47 46 W.	.38½	....	...	644
	Autumn	119	0	33	0	30	0	33	0	106	2	48	0	32	1	96	9	0	N. 49 12 W.	.16	....	...	637
	Winter	166	1	24	0	43	1	32	0	79	1	61	1	20	1	60	3	0	N. 16 47 W.	.17½	....	...	632
	The year	591	1	141	1	113	9	113	4	349	6	221	3	126	6	375	27	0	N. 34 28 W.	.22½	....	...	2557
132. St. Laurent d'Oingt.	Spring	162	...	21	...	5	...	60	...	107	...	27	...	6	...	302	...	0	N. 40 11 W.	.55½	....	...	552
	Summer	191	...	23	...	6	...	54	...	78	...	17	...	12	...	139	...	0	N. 19 14 W.	.36	....	...	552
	Autumn	119	...	39	...	16	...	92	...	88	...	23	...	0	...	169	...	0	N. 15 40 W.	.18½	....	...	546
	Winter	111	...	33	...	23	...	87	...	70	...	43	...	1	...	173	...	0	N. 25 50 W.	.19½	....	...	542
	The year	583	...	116	...	50	...	293	...	343	...	110	...	19	...	783	...	0	N. 27 47 W.	.29	....	...	2192
133. Givors.	Spring	261	...	1	...	1	...	0	...	228	...	22	...	0	...	39	...	0	N. 42 31 W.	.11	....	...	552
	Summer	271	...	5	...	2	...	1	...	193	...	15	...	2	...	46	...	0	N. 20 44 W.	.20½	....	...	552
	Autumn	209	...	2	...	0	...	0	...	257	...	32	...	0	...	44	...	0	S. 53 57 W.	.12	....	...	546
	Winter	275	...	3	...	0	...	0	...	203	...	36	...	2	...	21	...	0	N. 32 19 W.	.14	....	...	542
	The year	1016	...	11	...	3	...	1	...	881	...	105	...	4	...	150	...	0	N. 44 50 W.	.11½	....	...	2192
134. Saint Foy.	Spring	158	...	109	...	56	...	46	...	120	...	8	...	38	...	17	...	0	N. 51 2 E.	.25½	....	...	552
	Summer	204	...	60	...	46	...	38	...	102	...	11	...	40	..	23	...	0	N. 22 8 E.	.26	....	...	552
	Autumn	180	...	63	...	83	...	34	...	158	...	6	...	20	...	2	...	0	N. 72 31 E.	.24	....	...	546
	Winter	175	...	100	...	92	...	36	...	78	...	16	...	19	...	23	...	0	N. 43 53 E.	38	....	...	542
	The year	717	...	332	...	277	...	154	...	458	...	41	...	117	...	65	...	0	N. 46 52 E.	.27	....	...	2192

(Nos. 135 to 145.)

Middle France.—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
135. Lyons. Surface wind.	Spring	80	3	29	1	64	0	0	0	90	4	23	2	8	3	41	16	...	N. 29° 5′ E.	.12	....	...	368
	Summer	100	2	30	0	80	0	1	0	64	7	26	5	10	3	36	3	...	N. 31 41 E.	.19½	....	..	368
	Autumn	57	1	30	0	91	0	6	1	39	8	34	2	7	4	29	6	...	N. 61 9 E.	.20	....	...	364
	Winter	56	1	40	0	75	0	1	0	58	6	33	0	15	2	45	5	...	N. 38 58 E.	.13	....	...	361
	The year	293	7	129	1	310	0	8	1	251	25	116	9	40	12	151	30	...	N. 40 36 E.	.15	....	...	1461
Motion of clouds.	Spring	79	3	7	0	1	0	1	3	43	6	31	2	30	4	37	15	...	N. 57 44 W.	.38			
	Summer	71	1	0	0	1	0	1	0	26	10	40	10	49	6	28	9	...	N. 73 41 W.	.48½			
	Autumn	57	1	4	0	0	0	2	0	44	8	33	5	25	8	30	12	...	N. 77 57 W.	.38			
	Winter	61	1	5	0	4	0	1	0	26	7	17	2	15	2	27	5	...	N. 46 10 W.	.37			
	The year	268	6	16	0	6	0	5	3	139	31	121	19	119	20	122	41	...	N. 65 35 W.	.39½			
Aggregate.	Spring	159	6	36	1	65	0	1	3	133	10	54	4	38	7	78	31	...	N. 34 0 W.	.17½			
	Summer	171	3	30	0	81	0	2	0	90	17	66	15	59	9	64	12	...	N. 40 0 W.	.20			
	Autumn	114	2	34	0	91	0	8	1	83	16	67	7	32	12	59	18	...	N. 31 38 W.	.10½			
	Winter	117	2	45	0	79	0	2	0	84	13	50	2	30	4	72	10	...	N. 12 36 W.	.16			
	The year	561	13	145	1	316	0	13	4	390	56	237	28	159	32	273	71	...	N. 30 59 W.	.16			
136. La Saulsaie.	Spring	2008	34	42	5	1	1	51	20	1347	23	308	4	333	3	365	12	0	N. 46 14 W.	.22½	....	...	736
	Summer	2092	45	78	2	14	0	57	15	1153	13	516	3	383	3	484	26	0	N. 35 59 W.	.22½	....	...	736
	Autumn	2292	21	32	3	4	2	46	8	1446	10	322	4	259	3	286	18	0	N. 37 15 W.	.22	....	...	728
	Winter	1960	26	31	2	7	1	40	9	1678	10	398	0	365	0	307	17	1	N. 73 43 W.	...	....	...	722
	The year	8352	126	183	12	26	4	194	52	5624	56	1544	11	1340	9	1442	73	1	N. 48 58 W.	...	....	...	2922
137. St. Rambert	Spring	233	...	88	...	60	...	52	...	171	...	116	...	86	...	116	...	0	N. 46 10 W.	.14½	....	...	460
	Summer	238	...	50	...	44	...	13	...	130	...	165	...	165	...	114	...	0	N. 70 17 W.	.34½	....	...	460
	Autumn	247	...	46	...	33	...	21	...	166	...	175	...	132	...	91	...	0	N. 80 42 W.	.27	....	...	455
	Winter	285	...	57	...	37	...	9	...	128	...	177	...	91	...	118	...	0	N. 55 15 W.	.29	....	...	451
	The year	1003	...	241	...	174	...	95	...	595	...	633	...	474	...	439	...	0	N. 64 41 W.	.24	....	...	1826
138. Eastern France, lat. 45° to 46°.[1]	Spring	3780	204	734	18	367	15	572	101	2783	87	828	63	939	156	1634	209	0	N. 38 57 W.	.20	N. 55½° E.	.02½	
	Summer	4031	305	484	11	337	13	353	64	2346	153	1176	164	1273	181	1505	268	0	N. 47 27 W.	.27½	N. 54 W.	.07	
	Autumn	3900	322	490	28	431	25	428	75	3071	86	994	126	866	147	1247	220	0	N. 47 25 W.	.17	S. 36½ E.	.04	
	Winter	3744	190	571	15	461	17	480	84	2897	76	1027	88	854	167	1495	202	1	N. 47 50 W.	.18	S. 29½ E.	.02½	
	The year	15455	1021	2279	72	1596	70	1833	324	11097	402	4025	441	3932	651	5881	899	1	N. 45 49 W.	.20			
139. Cublize.	Spring	121	...	29	...	92	...	9	...	28	...	66	...	111	...	55	...	0	N. 38 0 W.	.26	....	...	552
	Summer	198	...	30	...	63	...	36	...	34	...	25	...	81	...	72	...	0	N. 11 40 W.	.36	....	...	552
	Autumn	175	...	38	...	70	...	65	...	24	...	24	...	72	...	78	...	0	N. 0 26 W.	.31	....	...	546
	Winter	145	...	33	...	66	...	29	...	51	...	38	...	81	...	77	...	0	N. 22 52 W.	.26	....	...	542
	The year	639	...	130	...	291	..	139	...	137	...	153	...	345	...	282	...	0	N. 16 17 W.	.29	....	...	2192
140. Monsol and St. Nizier.	Spring	201	...	0	...	11	...	47	...	159	...	24	...	30	...	142	...	0	N. 41 47 W.	.20	....	...	644
	Summer	220	...	1	...	10	...	13	...	108	...	46	...	29	...	155	...	0	N. 39 57 W.	.40½	....	...	644
	Autumn	134	...	0	...	23	...	51	...	144	...	71	...	47	...	147	...	0	N. 86 40 W.	.22	....	...	637
	Winter	143	...	0	...	33	...	125	...	85	...	45	...	32	...	99	...	0	N. 57 54 W.	.02½	....	...	632
	The year	698	...	1	...	77	...	236	...	496	...	186	...	128	...	543	...	0	N. 54 10 W.	.21	....	...	2557
141. Beaujeu.	Spring	116	...	4	...	20	...	34	...	117	...	21	...	58	...	85	...	0	N. 75 1 W.	.19½	....	...	490
	Summer	102	...	0	...	19	...	33	...	147	...	61	...	60	...	98	...	0	S. 72 3 W.	.08½	....	...	522
	Autumn	84	...	10	...	32	...	46	...	157	...	47	...	48	...	61	...	0	S. 30 47 W.	.12½	....	...	485
	Winter	103	...	5	...	15	...	39	...	165	...	43	...	26	...	61	...	0	S. 36 5 W.	.14½	....	...	511
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	S. 60 42 W.	.19	....	...	2008
142. Chalons.	Spring	38	...	0	...	29	...	0	...	9	...	1	...	11	...	4	...	0	N. 24 56 E.?	.37½	....	...	92
	Summer	13	...	0	...	38	...	2	...	4	...	2	...	29	...	4	...	0	N. 34 26 E.?	.12	....	...	92
	Autumn	28	...	2	...	25	...	0	...	22	...	0	...	14	...	0	...	0	N. 59 10 E.?	.16	....	...	91
	Winter	41	...	1	...	14	...	1	...	22	...	1	...	10	...	1	...	0	N. 11 53 E.?	.21½	....	...	91
	The year	120	...	3	...	106	...	3	...	57	...	4	...	64	...	9	...	0	N. 29 7 E.?	.21	....	...	366
143. Verdun.	Spring	34	...	4	...	0	...	2	...	47	...	1	...	1	...	2	...	0	S. 5 53 E.?	.12	....	...	92
	Summer	44	...	0	...	1	...	1	...	35	...	6	...	2	...	3	...	0	N. 47 12 W.?	.10	....	...	92
	Autumn	36	...	4	...	2	...	8	...	34	...	6	...	0	...	1	..	0	N. 51 49 E.?	.07½	....	...	91
	Winter	33	...	4	...	2	...	2	...	44	...	3	...	2	...	0	...	0	S. 10 16 E.?	.13½	....	...	90
	The year	147	...	12	...	5	...	13	..	160	...	16	...	5	...	6	...	0	S. 84 24 E.	.06	....	...	365
144. Bourg.	Spring	227	...	11	...	4	...	3	...	127	...	9	...	59	...	19	...	0	N. 29 56 W.	.28½	....	...	460
	Summer	222	...	14	...	5	...	8	...	78	...	42	...	51	...	29	...	0	N. 30 7 W.	.34½	....	...	460
	Autumn	196	...	9	...	7	...	14	...	139	...	23	...	47	...	20	...	0	N. 47 17 W.	.16½	....	...	455
	Winter	204	...	15	...	3	...	13	...	150	...	8	...	47	...	13	...	0	N. 33 31 W.	.15½	....	...	451
	The year	849	...	49	...	19	...	38	...	494	...	82	...	204	...	81	...	0	N 33 24 W.	.23½	....	...	1826
145. Lons-le-Saulnier.	Spring	75	...	76	...	0	...	5	...	107	...	0	...	0	...	13	...	0	S. 60 20 E.	.20	....	...	276
	Summer	123	...	61	...	0	...	1	...	70	...	10	...	0	...	11	...	0	N. 16 47 E.	.36½	....	...	276
	Autumn	48	...	65	...	0	...	15	...	130	...	4	...	0	...	11	...	0	S. 47 47 E.	.23	....	...	273
	Winter	75	...	62	...	0	...	2	...	127	...	0	...	0	...	5	...	0	S. 23 4 E.	.39½	....	...	271
	The year	321	...	264	...	0	...	23	...	434	...	14	...	0	...	40	...	0	S. 64 13 E.	.16	....	...	1096

[1] Observed at Arbresle, Cercie, Duerne, Du Puy, Givors, La Saulsaie, Lyons, St. Foy, St. Laurent d'Oingt, St. Rambert, and Tarare.
[2] Computed from the resultants for the seasons.

(Nos. 146 to 159.) **Middle France.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
146. Syam.[1]	Spring	72	7	4	1	1	0	3	2	34	23	49	13	16	1	6	8	37	S. 86° 42′ W.	.32½	....	...	368
	Summer	75	11	13	4	11	1	2	9	31	15	37	12	37	2	7	18	42	N. 46 18 W.	.13	....	...	368
	Autumn	59	12	9	2	7	1	2	3	65	19	51	12	19	5	8	18	36	S. 68 36 W.	.22	....	...	364
	Winter	69	3	7	4	1	0	8	2	31	18	48	7	23	3	6	14	31	S. 63 8 W.	.27	....	...	360
	The year	356	46	40	13	29	2	18	22	200	94	241	58	115	12	37	74	146	N. 86 8 W.	.22	....	...	1826
147. Fort de Joux.	Spring	6	...	43	...	25	...	32	...	25	...	39	...	62	...	44	...	0	S. 79 47 W.	.15½	....	...	276
	Summer	7	...	28	...	15	...	15	...	27	...	73	...	65	...	46	...	0	S. 73 55 W.	.39½	....	...	276
	Autumn	6	...	50	...	27	...	29	...	16	...	70	...	48	...	27	...	0	S. 52 47 W.	.15½	....	...	273
	Winter	5	...	58	...	47	...	33	...	21	...	52	...	34	...	21	...	0	S. 51 49 E.	.12	....	...	271
	The year	24	...	179	...	114	...	109	...	89	...	234	...	209	...	138	...	0	S. 61 38 W.	.16	....	...	2096
148. Eastern France, lat. 46° to 47°.[2]	Spring	890	7	171	1	182	0	135	2	653	23	210	13	348	1	370	8	37	N. 4[illegible] 22 W.	.17	N. 34° W.	.07	
	Summer	1004	11	147	4	162	1	111	9	534	15	302	12	354	2	425	18	42	N. 42 35 W.	.11½	N. 21 E.	.02	
	Autumn	766	12	187	2	193	1	230	3	731	19	296	12	285	5	353	18	36	N. 81 39 W.	.09	S. 4 W.	.05	
	Winter	818	3	185	4	181	0	252	2	696	18	238	7	255	3	283	14	31	N. 55 12 W.	.06	S. 52 E.	.05	
	The year	3559	46	697	13	727	2	731	22	2653	94	1102	58	1262	12	1441	74	146	N. 51 47 W.	.14			
149. Dijon, 1845 to 1853 and 1859.[3]	Spring	110	...	70	...	117	...	61	...	159	...	48	...	217	...	37	...	9	S. 40 46 W.	.08	....	...	828
	Summer	66	...	37	...	158	...	60	...	147	...	64	...	277	...	19	...	11	S. 40 12 W.	.20	....	...	828
	Autumn	120	...	73	...	77	...	62	...	214	...	77	...	133	...	52	...	7	S. 26 29 W.	.14	....	...	819
	Winter	143	...	62	...	72	...	24	...	205	...	55	...	193½	...	43½	...	9	S. 71 39 W.	.17	....	...	812
	The year	492	...	276	...	481	...	225	...	788	...	265	...	905½	...	185½	...	36	S. 45 50 W.	.14	....	...	3652
150. Dijon, 1783 & 1784.	The year	498	67	101	16	99	14	50	57	470	74	228	63	218	48	98	49	0	S. 81 37 W.	.15	....	...	2150
151. La Fleche, 1852.	Spring	9	...	17	...	29	...	6	...	5	...	9	...	12	...	5	...	0	N. 69 12 E.?	.24½	....	...	92
	Summer	4	...	4	...	10	...	2	...	8	...	14	...	13	...	7	...	0	S. 61 1 W.?	.25	....	...	92
	Autumn	5	...	8	...	15	...	3	...	17	...	16	...	22	...	5	...	0	S. 40 54 W.?	.23½	....	...	91
	Winter	10	...	3	...	4	...	4	...	16	...	26	...	17	...	11	...	0	S. 63 10 W.?	.42½	....	...	91
	The year	28	...	32	...	58	...	15	...	46	...	65	...	64	...	28	...	0	S. 50 11 W.	.15	....	...	366
152. La Fleche, 1842 to 1849.	The year	700	...	999	...	518	...	297	...	274	...	1672	...	618	...	766	...	0	....	...	....	...	2922
153.																							
154. Dole.	Spring	75	...	20	...	10	...	8	...	100	...	37	...	2	...	24	...	0	S. 30 19 W.	.11	....	...	276
	Summer	74	...	7	...	4	...	9	...	96	...	46	...	13	...	27	...	0	S. 53 14 W.	.23½	....	...	276
	Autumn	67	...	20	...	5	...	3	...	94	...	55	...	12	...	17	...	0	S. 44 52 W.	.21½	....	...	273
	Winter	109	...	24	...	5	...	3	...	96	...	30	...	0	...	4	...	0	N. 0 18 E.	.03½	....	...	271
	The year	325	...	71	...	24	...	23	...	386	...	168	...	27	...	72	...	0	S. 48 13 W.	.13	....	...	1096
155. Gray.	Spring	69	...	26	...	8	...	20	...	70	...	36	...	11	...	36	...	0	N. 81 30 W.	.08	....	...	276
	Summer	60	...	24	...	10	...	12	...	58	...	45	...	38	...	26	...	0	S. 86 47 W.	.19	....	...	276
	Autumn	77	...	17	...	4	...	18	...	69	...	41	...	13	...	34	...	0	N. 86 24 W.	.14	....	...	273
	Winter	67	...	19	...	8	...	20	...	61	...	47	...	18	...	27	...	0	S. 75 14 W.	.13	....	...	271
	The year	273	...	86	...	30	...	70	...	258	...	169	...	80	...	123	...	0	S. 87 34 W.	.13	....	...	1096
156. Besançon.	Spring	91	...	7	...	5	...	0	...	89	...	7	...	20	...	23	...	0	N. 59 43 W.	.15	....	...	276
	Summer	73	...	6	...	6	...	1	...	112	...	16	...	32	...	30	...	0	S. 58 40 W.	.23	....	...	276
	Autumn	98	...	2	...	3	...	0	...	108	...	4	...	24	...	20	...	0	N. 85 44 W.	.14	....	...	273
	Winter	115	...	5	...	1	...	0	...	72	...	12	...	24	...	28	...	0	N. 39 32 W	.29¼	....	...	271
	The year	377	...	20	...	15	...	1	...	381	...	39	...	100	...	101	...	0	N. 72 31 W	.17	....	...	1096
157. Vesoul.	Spring	13	...	5	...	69	...	7	...	2	...	38	...	128	...	12	...	0	S. 83 29 W.	.31½	....	...	276
	Summer	7	...	1	...	9	...	4	...	18	...	66	...	130	...	8	...	0	S. 72 19 W.	.73	....	...	276
	Autumn	0	...	6	...	57	...	2	...	3	...	70	...	125	...	10	...	0	S. 70 17 W.	.46	....	...	273
	Winter	1	...	8	...	98	...	2	...	4	...	26	...	95	...	6	...	0	S. 44 14 W	.07½	....	...	271
	The year	21	...	20	...	233	...	15	...	27	...	200	...	478	...	36	...	0	S. 73 2 W.	.39½	....	...	1096
158. Bourbonne.	Spring	4	...	21	...	4	...	2	...	1	...	21	...	12	...	27	...	0	N. 51 12 W.	.36	....	...	92
	Summer	3	...	21	...	2	...	3	...	5	...	24	...	16	...	18	...	0	N. 76 21 W.	.29½	....	...	92
	Autumn	3	...	22	...	8	...	3	...	3	...	36	...	3	...	13	...	0	S. 76 42 W.	.14½	....	...	91
	Winter	5	...	8	...	17	...	2	...	8	...	25	...	15	...	10	...	0	S. 59 10 W.	.20½	....	...	90
	The year	15	...	72	...	31	...	10	...	17	...	106	...	46	...	68	...	0	N. 79 24 W.	.22½	....	...	365
159. Rousses.	Spring	108	...	62	...	8	...	34	...	43	...	60	...	22	...	31	...	0	N. 9 14 W.	.18	....	...	368
	Summer	96	...	66	...	9	...	16	...	19	...	65	...	42	...	55	..	0	N. 29 37 W.	.33	....	...	368
	Autumn	92	...	77	...	12	...	12	...	39	...	71	...	18	...	43	...	0	N. 16 47 W	.23	....	...	364
	Winter	100	...	112	...	7	...	16	...	22	..	39	...	38	...	27	...	0	N. 5 20 E.	.38	....	...	361
	The year	396	...	317	...	36	...	78	...	123	...	235	...	120	...	156	...	0	N. 11 47 W.	.27	....	...	1461

[1] Seasons for the whole period except 1848.
[2] Observed at Beaujeu, Bourg, Chalons, Cublize, Fort de Joux, Lons-le-Saulnier, Monsol, St. Nizier, Syam, and Verdun.
[3] Seasons for all the years except 1847.

(Nos. 160 to 165.)

Middle France.—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
160. Montbeliard.	Spring	3	...	83	...	0	...	0	...	6	...	171	...	0	...	12	...	0	S. 51° 16′ W.	.33	....	...	276
	Summer	4	...	63	...	0	...	0	...	15	...	192	...	0	...	1	...	0	S. 42 10 W.	.50	....	...	276
	Autumn	0	...	104	...	0	...	2	...	9	...	156	...	0	...	2	...	0	S. 38 47 W.	.21	....	...	273
	Winter	60	...	4	...	1	...	0	...	34	...	91	...	3	...	8	...	0	S. 66 39 W.	.38	....	...	271
	The year	67	...	254	...	1	...	2	...	64	...	610	...	3	...	23	...	0	S. 50 14 W.	.35	....	...	1096
161. Eastern France, lat. 47° to 48°.[1]	Spring	482	...	311	...	250	...	138	...	475	...	427	...	424	...	207	...	9	S. 85 5 W.	.11	N. 61° E.	.05	
	Summer	387	...	229	...	208	...	107	...	478	...	532	...	561	...	191	...	11	S. 68 35 W.	.25	S. 54½ W.	.10	
	Autumn	462	...	329	...	181	...	105	...	556	...	526	...	350	...	196	...	7	S. 66 11 W.	.15	S. 27 E.	.03½	
	Winter	610	...	245	...	213	...	71	...	518	...	351	...	403½	...	164½	...	9	N. 75 57 W.	.13	N. 23 E.	.07	
	The year	3139	67	2214	16	1469	14	768	57	2771	74	3736	63	2574½	48	1622½	49	36	S. 87 32 W.	.15½			

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
162. Strassburg.	January	634	2525	503	831	3075	925	194	613	...	....	...	....	...	620
	February	481	1938	384	606	3031	940	322	762	...	....	...	....	...	564
	March	894	2828	447	437	2203	1231	372	888	...	....	...	....	...	620
	April	950	2503	637	581	2022	894	338	1075	...	....	...	....	...	600
	May	1206	2469	628	703	2081	844	378	990	...	....	...	....	...	620
	June	1334	1853	544	638	1631	1034	490	1444	...	....	...	....	...	600
	July	847	1728	544	775	2416	1262	494	1228	...	....	...	....	...	620
	August	1041	1766	484	950	2309	1144	594	1025	...	....	...	....	...	620
	September	803	2378	606	909	2181	922	390	812	...	....	...	....	...	600
	October	659	2384	563	1053	2738	888	315	703	...	....	...	....	...	620
	November	481	2128	353	781	3406	956	272	653	...	....	...	....	...	600
	December	538	1944	416	672	3816	1144	250	522	...	....	...	....	...	620
	Spring	3050	7800	1712	1721	6306	2969	1088	2953	...	N. 74 54 E.	.12	N. 10 E.	.11½	1840
	Summer	3222	5347	1572	2363	6356	3440	1578	3697	...	N. 68 24 E.	.01½	N. 41½ W.	.12	1840
	Autumn	1943	6890	1522	2743	8325	2766	977	2168	...	S. 44 58 E.	.20	S. 37½ E.	.07½	1820
	Winter	1653	6407	1303	2109	9922	3009	766	1897	...	S. 26 27 E.	.25	S. 6 E.	.14	1804
	The year	9868	26444	6109	8936	30909	12184	4409	10715	...	S. 47 20 E.	.13	....	...	7304

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
163. Goersdoff. Surface wind.	Spring	73	18	64	55	297	148	98	28	50	65	150	152	216	27	67	19	0	S. 36 23 W.	.13	N. 20 W.	.03	736
	Summer	62	34	59	22	249	75	78	22	81	58	170	115	287	56	137	22	0	S. 62 53 W.	.17	N. 55 W.	.10	736
	Autumn	53	14	55	42	270	111	61	37	58	58	113	93	246	26	85	11	0	S. 12 54 E.	.22½	S. 54 E.	.15	728
	Winter.	40	6	46	33	253	85	73	22	50	39	151	104	260	35	87	13	0	S. 36 54 W.	.15½	N. 67 W.	.02½	721
	The year	228	72	224	152	1069	419	310	109	239	220	584	464	1009	144	376	65	0	S. 26 59 W.	.13	....	...	2921
Goersdoff. Motion of clouds.	Spring	38	1	8	3	24	7	27	2	53	5	100	9	50	7	58	1	0	S. 61 28 W.	.35	S. 59 E.	.16	460
	Summer	25	0	4	4	11	7	25	0	24	6	179	18	68	14	90	7	1	S. 72 39 W.	.54½	S. 47 W.	.11	460
	Autumn	33	0	6	1	14	5	13	0	27	3	118	6	55	6	56	3	0	S. 79 2 W.	.59	N. 89 W.	.03	455
	Winter	42	1	3	4	18	0	5	1	16	3	47	1	44	5	41	0	0	N. 76 19 W.	.38	N. 21 E.	.20	451
	The year	138	2	21	12	67	19	70	3	120	17	444	34	217	32	245	11	1	S. 74 45 W.	.44	....	...	1826
Goersdoff. Aggregate.	Spring	111	19	72	58	321	155	125	30	103	70	250	161	266	34	125	20	1	S. 15 4 W.	.14	S. 75½ E.	.10	736
	Summer	87	34	63	26	260	82	103	22	105	64	349	133	355	70	227	29	1	S. 67 45 W.	.26½	N. 84 W.	.12	736
	Autumn	86	14	61	43	284	116	74	37	85	61	231	99	301	32	141	14	0	S. 41 27 W.	.15	S. 78 E.	.03	728
	Winter	82	7	49	37	271	85	78	23	66	42	198	105	304	40	128	13	0	S. 55 50 W.	.16	N. 6 W.	.02	721
	The year	366	74	245	164	1136	438	380	112	359	237	1028	498	1226	176	621	76	1	S. 49 42 W.	.17	....	...	2921
164. Ichtratzheim.	Spring	30	21	4	2	4	5	30	11	30	35	34	6	11	24	23	6	0	S. 51 38 W.	.22	....	...	276
	Summer	23	9	13	1	12	7	42	5	66	27	21	10	8	13	12	5	0	S. 0 46 W.	.32	....	...	276
	Autumn	16	27	5	5	8	8	27	13	59	30	21	2	3	9	31	9	0	S. 6 59 W.	.21	....	...	273
	Winter	18	23	10	3	3	7	21	14	41	32	25	2	7	12	31	1	0	S. 28 13 W.	.20	....	...	271
	The year	87	80	32	11	27	27	120	43	196	124	101	20	29	58	97	21	0	S. 19 25 W.	.22½	....	...	1096
165. North-eastern France.[2]	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 30 W.	.12	N. 11¼ E.	.09	
	Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 30 W.	.22	N. 55 W.	.10	
	Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 28 30 W.	.22	S. 16 E.	.11½	
	Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 30 W.	.16	S. 40½ E.	.04½	
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 45 W.	.14½			

[1] Observed at Bourbonne, Besançon, Dijon, Dole, Gray, La Fleche, Montbeliard, Rousses, and Vesoul.
[2] Observed at Clermont Oise, Doulevant, Goersdoff, Ichtratzheim, Metz, Nancy, and Strassburg. Resultant combined by plotting.

(Nos. 166 to 178.) **Western Switzerland.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos	Date.
Chaumont.	Sire,	3	9	1864 to 1869 inclusive.
Chaux-de-fonds,	Nicolet,	3	4	1859, 1860, and Dec., 1864, to March, 1866, inclusive.
Dizy,	Borgeand,	1	10	1864 to 1866 inclusive.
Geneva,	Observatory,	14	3	1852 to 1860 and 1863 to 1869 both inclusive.
Le Sentier,	Lecoultre,	1	7	December, 1864, to June, 1866, inclusive.
Marchairuz,	Audernars,	0	11	December, 1864, to October, 1866, inclusive.
Montreux,	Carrand,	3	6	1864 to 1869 inclusive.
Morges,	Burnier,	6	7	1850 to 1854 and Dec. 1864 to June, 1866, both inclus.
Neuchatel,	Observatory,	4	10	1735 and 1864 to 1869 inclusive.
Ponts-de-Martel,	Chapin,	2	0	1866 to 1869 inclusive.
St. Croix,	Junod,	3	10	1864 to 1869 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force,	
166. Marchairuz	Spring	6	3	15	36	6	0	2	23	1	S. 73° 8′ E.?	.26½	....	...	92
	Summer	12	1	3	17	1	10	6	36	0	N. 51 37 W.?	.34	....	...	92
	Autumn	0	9	0	3	0	13	3	30	1	N. 55 48 W.?	.49	....	...	91
	Winter	1	8	11	22	4	6	10	27	1	N. 60 8 W ?	.04	....	...	90
	The year	19	21	29	78	11	29	21	116	3	N. 40 1 W.	.12	....	...	365
167. La Sentier.	Spring	84	55	0	0	21	156	10	4	309	S. 86 10 W.	.13	....	...	184
	Summer	104	24	1	0	1	61	4	3	172	N. 21 33 W.	.23	....	...	122
	Autumn	60	0	0	0	7	119	1	1	88	S. 70 29 W.	.33	....	...	91
	Winter	53	19	8	2	0	144	9	18	223	S. 76 34 W	.22	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 86 38 W.	.18½	....	...	577
168. St. Croix.	Spring	55	77	30	195	8	73	15	104	545	S. 79 58 E.	.08	....	...	337
	Summer	82	50	29	243	5	63	30	152	513	N. 86 21 E.	.04½	....	...	368
	Autumn	46	30	20	250	5	95	33	113	639	S. 20 25 E.	.09	....	...	364
	Winter	50	29	20	155	13	172	44	164	491	S. 66 18 W.	.13	....	...	327
	The year[1]	...	...	...	...	...	...	...	...	...	S. 1 28 E.	.03½	....	...	1396
169. Dizy.	Spring	167	10	2	17	38	81	7	14	284	N. 34 42 W.	.15	....	...	184
	Summer	146	1	3	5	30	91	17	12	238	N. 55 15 W.	.18½	....	...	153
	Autumn	108	15	2	11	39	94	11	22	218	N. 73 56 W.	.14½	....	...	1151
	Winter	132	45	2	5	52	129	13	6	267	N. 69 14 W.	.11½	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 57 3 W.	.14½	....	...	668
170. Montreux.	Spring	28	13	3	19	7	9	13	68	576	N. 35 34 W.	.10	N. 42½° W.	.04½	337
	Summer	23	16	2	16	5	0	21	38	738	N. 28 23 W.	.05½	S. 41 E.	.01	306
	Autumn	11	7	7	10	24	2	5	38	672	N. 56 48 W.	.02	S. 18 E.	.04	303
	Winter	29	16	11	35	8	10	7	59	712	N. 11 41 W.	.05	N. 85 E.	.02	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 29 21 W.	.05½	....	...	1307
171. Chaumont.	Spring	189	237	102	28	24	343	65	206	339	N. 37 12 W.	.17½	N. 57½ E.	.04	368
	Summer	121	224	79	29	7	102	118	188	270	N. 11 52 W.	.28	N. 27½ E.	.18	306
	Autumn	114	323	43	8	4	342	53	131	338	N. 31 0 W.	.16	N. 70½ E.	.06	334
	Winter	83	288	7	1	0	843	120	194	314	S. 73 14 W.	.31	S. 38 W.	.26	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 49 21 W.	.18	....	...	1369
172. Neuchatel. Surface winds.	Spring	18	328	107	40	14	292	57	59	413	N. 55 21 E.	.05½	....	...	460
	Summer	27	262	97	45	18	281	100	69	376	N. 69 26 W.	.03	....	...	460
	Autumn	6	202	69	18	5	140	54	26	474	N. 46 29 E.	.07½	....	...	303
	Winter	17	250	58	6	1	382	111	69	471	S. 80 15 W.	.14	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 43 17 W.	.02½	....	...	1584
Motion of clouds.	Spring	0	19	0	1	0	47	0	6	19	S. 54 40 W.	.31	....	...	92
	Summer	0	15	0	3	0	46	0	9	16	S. 55 58 W.	.35½	....	...	92
	Autumn	0	26	0	5	0	31	0	4	28	S. 33 43 W.	.05½	....	...	91
	Winter	1	24	0	0	0	39	0	2	23	S. 55 44 W.	.16½	....	...	90
	The year	1	84	0	9	0	163	0	21	86	S. 53 53 W.	.22	....	...	365
Aggregate.	Spring	18	347	107	41	14	339	57	65	432	N. 55 28 E.	.03	N. 84½ E.	.05½	460
	Summer	27	277	97	48	18	327	100	78	392	N. 68 46 W.	.04½	N. 73 W.	.01½	460
	Autumn	6	228	69	23	5	171	54	30	502	N. 47 27 E.	.06	N. 68 E.	.08	303
	Winter	18	274	58	6	1	421	111	71	494	S. 78 35 W.	.14	S. 70 W.	.11½	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 65 28 W.	.03½	....	...	1584

[1] Computed from the resultants for the seasons.

(Nos. 173 to 178.) **Western Switzerland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
173. Chaux-de-fonds.	Spring	52.2	31.9	17.2	20.4	40.2	74.7	47.1	35.6	2	S. 83° 52′ W.	.22	....	...	307
	Summer	44.7	26.2	8.9	13.	18.4	76.4	48.9	37.9	0	N. 84 50 W.	.34	....	...	276
	Autumn	32.6	17.	17.	29.7	41.5	69.8	43.	20.1	2	S. 46 47 W.	.28½	....	...	273
	Winter	34.9	40.	23.9	42.1	64.4	205.2	40.9	24.7	3	S. 37 27 W.	.42	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 62 58 W.	.28½	....	...	1217

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
174. Geneva, 1826 to 1860.																						
Spring	29	...	20	...	2	...	1	...	4	...	30	...	3	...	3	...	0	N. 26 8 W.	.23½			
Summer	29	...	18	...	1	...	1	...	4	...	31	...	3	...	5	...	0	N. 36 57 W.	.25½			
Autumn	23	...	19	...	1	...	4	...	4	...	34	...	3	...	3	...	0	N. 57 7 W.	.15½			
Winter	20	...	16	...	5	...	5	...	9	...	29	...	3	...	3	...	0	N. 86 8 W.	.06½			
The year	101	...	73	...	9	...	11	...	21	...	124	...	12	...	14	...	0	N. 41 48 W.	.17			
175. Geneva, 1863 to 1869.																						
Spring	4511	2422	370	44	148	51	129	183	1171	2296	1572	273	335	51	235	426	394	N. 25 47 W.	.21	....	...	1288
Summer	4413	1585	308	59	161	63	107	220	1389	2140	736	294	372	70	195	393	461	N. 24 42 W.	.20	....	...	1288
Autumn	2883	3178	464	81	223	116	220	264	1623	2016	1179	218	347	58	169	314	453	N. 7 45 W.	.13	....	...	1274
Winter	2168	2870	636	92	448	86	344	400	1682	2371	1659	326	419	61	195	241	394	S. 76 28 W.	.04	....	...	1355
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 25 9 W.	.13½	....	...	5205
176. Morges.																						
Spring	154	54	49	5	2	10	73	46	103	29	115	17	22	2	6	10	359	S. 0 20 E.	.06	....	...	644
Summer	108	33	43	0	1	16	111	50	86	38	94	20	18	0	4	3	245	S. 13 0 E.	.18	....	...	583
Autumn	125	58	39	1	6	8	64	36	72	28	82	26	23	1	7	6	170	S. 9 39 E.	.05	....	...	546
Winter	219	62	75	9	7	1	21	13	46	17	197	28	47	4	17	20	282	N. 49 38 W.	.18½	....	...	541
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 36 W.	.04½	....	...	2314
177. Ponts-de-Martel.																						
Spring	0	...	172	...	2	...	8	...	0	...	214	...	18	...	5	...	431	S. 53 53 W.	.06½	....	...	245
Summer	0	...	99	...	0	...	0	...	0	...	101	...	0	...	1	...	290	S. 71 29 W.	.00½	....	...	153
Autumn	12	...	54	...	0	...	0	...	0	...	30	...	0	...	0	...	204	N. 30 22 E.	.11	....	...	91
Winter	0	...	95	...	3	...	0	...	0	...	214	...	60	...	3	...	375	S. 60 13 W.	.22	....	...	240
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 74 54 W.	.05	....	...	729
178. Aggregate at all stations.																						
Spring	5264	2476	1365	49	428	61	566	229	1433	2325	2977	290	591	53	766	436	3672	N. 28 43 W.	.15	N. 14½° W.	.07	4446
Summer	5087	1618	1069	59	394	79	604	270	1563	2178	1671	314	721	70	767	396	3293	N. 26 31 W.	.15	N. 10½ W.	.07½	4107
Autumn	3398	3236	1186	82	387	124	619	300	1821	2044	2197	244	573	59	561	320	3287	N. 15 7 W.	.09½	N. 56 E.	.04½	3821
Winter	2788	2932	1525	101	599	87	633	413	1870	2388	4000	354	881	65	779	261	3556	S. 77 30 W.	.09½	S. 21½ W.	.12	4357
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 37 12 W.	.11	....	...	16731

[1] Computed from the resultants for the seasons.

(Nos. 179 to 196.)

Northern Switzerland.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Aarau,	Zschokke,	3	4	1864 to 1869 inclusive.
Affoltern,	Kuhn,	3	10	1864 to 1869 inclusive.
Basle,	Merian.	3	8	1864 to 1869 inclusive.
Bozberg,	Frei,	2	11	1864 to 1868 inclusive.
Frauenfeld,	Sulzberger,	3	6	1864 to 1869 inclusive.
Kaiserstuhl,	Hausmann,	2	2	1867 to 1869 inclusive.
Konigsfelden,	Schaufelbuhl,	1	4	1864 to 1866 inclusive.
Kreuzlingen,	Schmidt,	1	11	1864 to 1869 inclusive.
Lohn	Beck,	3	5	1864 to 1869 inclusive.
Olten,	Munzinger,	3	8	1864 to 1869 inclusive.
Porrentruy,	Froidevaux,	0	4	1866, 1867, and 1869.
Schaffhausen,	Magis,	3	5	1864 to 1869 inclusive.
Uetliberg,	F. Beyel,	3	6	1864 to 1869 inclusive.
Winterthur,	Steiner,	3	6	1864 to 1869 inclusive.
Zurich,	Sternwarte,	4	2	1864 to 1869 inclusive.
Zurzach,	Girtanner,	2	0	1864 to 1866 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
179. Porrentruy.[1]	Spring	0	11	0	0	0	4	3	0	76	N. 21° 30′ E.??	.06½	....	...	31
	Summer	1	0	0	0	5	16	1	1	54	S. 41 43 W.??	.20	....	...	31
	Autumn	0	5	2	0	0	0	0	0	84	N. 57 26 E.??	.07	....	...	31
	Winter	0	0	0	26	17	3	0	0	63	S. 23 26 E.??	.37½	....	...	28
	The year	1	16	2	26	22	23	4	1	277	S. 7 29 E.?	.12	....	...	121
180. Basle.	Spring	122	39	185	39	36	102	229	50	6	N. 62 56 W.	.13½	....	...	337
	Summer	237	23	139	24	41	114	302	74	0	N. 57 34 W.	.33	....	...	337
	Autumn	110	37	171	83	27	91	115	40	0	N. 73 14 E.	.08	....	...	307
	Winter	77	20	232	140	39	148	193	18	0	S. 14 4 E.	.16½	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	N. 70 45 W.	.07½	....	...	1342
181. Olten.	Spring	77	66	68	25	7	179	67	32	628	S. 86 37 W.	.08	....	...	337
	Summer	99	39	52	14	4	97	45	36	694	N. 35 29 W.	.08	....	...	337
	Autumn	37	33	39	10	8	191	27	34	611	S. 60 37 W.	.13½	....	...	303
	Winter	40	75	38	24	31	430	96	30	585	S. 61 52 W.	.26½	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	S. 74 36 W.	.12	....	...	1338
182. Bozberg.	Spring	1	106	45	6	4	60	62	95	597	N. 72 9 W.	.10½	....	...	307
	Summer	1	62	49	5	0	21	24	95	586	N. 5 53 W.	.11	....	...	306
	Autumn	1	46	62	5	4	36	28	22	456	N. 61 0 E.	.05	....	...	212
	Winter	0	43	34	18	1	92	73	71	553	N. 89 3 W.	.12½	....	...	271
	The year[2]	...	...	...	...	...	...	...	...	...	N. 48 51 W.	.06½	....	...	1096
183. Aarau.	Spring	9	78	64	6	4	151	78	58	632	S. 84 28 W.	.09½	....	...	306
	Summer	41	93	41	3	7	50	60	130	508	N. 27 57 W.	.19	....	...	275
	Autumn	17	123	30	3	4	84	41	35	596	N. 5 28 W.	.07	....	...	273
	Winter	3	77	35	5	7	335	146	45	717	S. 62 50 W.	.26½	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	S. 76 11 W.	.11	....	...	1215
184. Zurzach.	Spring	11	63	16	17	60	48	4	12	328	S. 31 56 E.	.09	....	...	184
	Summer	13	54	18	29	81	55	9	24	282	S. 9 18 E.	.13	....	...	184
	Autumn	6	68	29	41	68	55	5	7	253	S. 36 41 E.	.18	....	...	182
	Winter	3	32	12	26	72	64	2	1	306	S. 2 39 E.	.21	....	...	180
	The year	33	217	75	113	281	222	20	44	1169	S. 18 28 E.	.15	....	...	730
185 & 186. Konigsfelden.	Spring	9	20	10	1	24	35	73	5	141	S. 73 24 W.?	.25	....	...	123
	Summer	8	12	20	0	10	16	44	8	175	S. 88 32 W.?	.11	....	...	92
	Autumn	3	12	7	2	16	9	40	0	0	S. 67 21 W.?	.36	....	...	91
	Winter	1	17	15	4	58	83	93	2	206	S. 49 34 W.	.34	....	...	180
	The year[2]	...	...	...	...	...	...	...	...	...	S. 65 19 W.	.26	....	...	486
187. Lohn.	Spring	32	135	51	24	10	148	102	54	458	N. 67 19 W.	.09	....	...	337
	Summer	25	96	35	14	7	73	67	65	431	N. 36 22 W.	.10½	....	...	276
	Autumn	38	113	20	6	1	77	60	41	400	N. 24 15 W.	.12½	....	...	273
	Winter	20	129	23	1	20	244	190	29	572	S. 77 5 W.	.22½	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	N. 65 53 W.	.11½	....	...	1247

[1] For the months of February, March, July and October only.
[2] Computed from the resultants for the seasons.

(Nos. 179 to 196.) **Northern Switzerland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
188. Schaffhausen.	Spring	6	90	54	14	10	92	66	15	550	S. 71° 33′ W.	.01½	....	...	337
	Summer	10	66	56	5	8	85	100	11	429	S. 83 21 W.	.08	....	...	276
	Autumn	6	74	19	8	1	107	64	4	514	S. 72 6 W.	.08½	....	...	273
	Winter	13	59	6	1	1	225	84	2	559	S. 61 55 W.	.23½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 68 29 W.	.10½	....	...	1247
189. Kaiserstuhl.	Spring	10	9	126	7	5	45	170	8	271	N. 74 17 W.	.11	....	...	184
	Summer	6	5	78	8	4	18	130	21	328	N. 88 22 W.	.12	....	...	184
	Autumn	7	4	63	1	0	19	105	5	382	S. 89 12 W.	.09½	....	...	182
	Winter	6	3	67	2	1	59	240	4	204	S. 81 11 W.	.37	....	...	150
	The year[1]	...	...	...	...	...	...	...	...	...	S. 87 58 W.	.17	....	...	700
190. Affoltern.	Spring	12	126	46	8	5	171	141	22	633	S. 83 46 W.	.12	....	...	337
	Summer	29	165	42	34	5	121	112	44	512	N. 36 17 W.	.07	....	...	337
	Autumn	11	126	32	6	5	169	94	15	648	S. 79 39 W.	.09	....	...	334
	Winter	11	107	20	10	9	380	221	18	698	S. 64 39 W.	.30	....	...	392
	The year[1]	...	...	...	...	...	...	...	...	...	S. 79 13 W.	.13	....	...	1400
191. Zurich.	Spring	64	193	55	105	46	69	129	193	385	N. 16 3 W.	.14	....	...	368
	Summer	90	142	78	57	37	40	126	225	405	N. 21 13 W.	.22	....	...	368
	Autumn	98	105	73	63	30	67	105	143	282	N. 22 10 W.	.17	....	...	364
	Winter	53	117	46	104	50	159	320	131	504	S. 88 39 W.	.22	....	...	420
	The year[1]	...	...	...	...	...	...	...	...	...	N. 39 5 W.	.16	....	...	1520
192. Uetliberg.	Spring	43	0	0	0	0	43	196	0	509	N. 86 49 W.	.29	....	...	337
	Summer	38	1	1	0	0	42	62	10	435	N. 80 31 W.	.16½	....	...	306
	Autumn	61	1	1	1	2	74	90	9	431	N. 84 54 W.	.22	....	...	273
	Winter	30	1	0	0	0	190	412	0	649	S. 79 14 W.	.43½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 89 3 W.	.27½	....	...	1277
193. Frauenfeld.	Spring	22	11	2	94	18	7	52	164	427	N. 59 46 W.	.14	....	...	337
	Summer	14	4	14	64	11	2	36	141	491	N. 51 54 W.	.12	....	...	337
	Autumn	12	3	13	37	10	4	34	56	327	N. 67 16 W.	.07½	....	...	243
	Winter	9	1	2	47	8	5	71	278	497	N. 57 48 W.	.30½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 57 12 W.	·16	....	...	1278
194. Winterthur.	Spring	9	174	59	9	2	265	48	81	496	S. 86 28 W.	.09½	....	...	337
	Summer	5	117	37	1	0	112	45	42	509	N. 43 28 W.	.06	....	...	276
	Autumn	11	114	27	1	4	159	35	32	591	N. 87 19 W.	.06½	....	...	303
	Winter	7	178	27	6	4	472	64	48	539	N. 56 35 W.	.24½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 66 28 W.	.11	....	...	1277
195. Kreuzlingen.	Spring	14	53	27	12	2	74	19	15	208	S. 85 21 W.	.02	....	...	153
	Summer	15	35	19	2	10	15	18	15	172	N. 11 52 E.?	.09	....	...	123
	Autumn	8	21	48	17	14	18	37	7	0	S. 61 32 E.	.13½	....	...	182
	Winter	3	56	13	12	8	251	62	22	356	S. 55 0 W.	.30½	....	...	270
	The year[1]	...	...	...	...	...	...	...	...	...	S. 41 4 W.	.05	....	...	728
196. Northern Switzerland.	Spring	441	1174	808	367	233	1497	1439	814	6345	N. 75 53 W.	.09	N. 52° E.	.03	4352
	Summer	632	914	679	260	230	877	1181	942	6011	N. 46 27 W.	.11	N. 23½ E.	.08	4045
	Autumn	426	885	636	284	194	1160	880	450	5575	N. 74 25 W.	.05½	N. 80 E.	.06	3826
	Winter	276	915	570	426	326	3140	2267	699	7008	S. 67 34 W.	.24	S. 49½ W.	.15	4779
	The year[1]	...	...	...	...	...	...	...	...	...	N. 86 56 W.	.11	....	...	17002

[1] Computed from the resultants for the seasons.

(Nos. 197 to 237.) **Central Switzerland.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Airolo,	Dotta,	0	4	1868 and 1869.
Altdorf,	Muller,	3	3	1864 to 1869 inclusive.
Andermatt,	Ver. Zurcher,	3	3	1864 to 1869 inclusive.
Auen,	Muller,	3	5	1864 to 1869 inclusive.
Beatenberg,	Krahenbuhl,	3	8	1864 to 1869 inclusive.
Berne,	Sternwarte,	1	7	1864, 1865, 1866 and 1868.
Bernhardin,	Bellig,	1	11	1864, 1865, 1866, 1868 and 1869.

(Nos. 197 to 201.) **Central Switzerland.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Brienz,	Hamberger,	3	11	1864 to 1869 inclusive.
Einsiedeln,	Regli,	3	8	1864 to 1869 inclusive.
Engelberg,	Wismann,	4	1	1864 to 1869 inclusive.
Faido,	A. Jemetta,	1	4	1864 to 1866 inclusive.
Faulhorn,	A. Bravais,	0	7	1841, 1842 and 1844.
Fribourg,	Claraz,	2	3	1864 to 1868 inclusive.
Gersau,	Muller,	1	1	1867 to 1869 inclusive.
Glaris,	Oertly,	1	11	1864 to 1867 inclusive.
Grimsel,	Indorf and Ott,	2	7	1864 to 1869 inclusive.
Grindelwald,	Dr. Beck,	0	10	1865, 1866 and 1868.
Interlaken,	Weihmuller,	3	11	1864 to 1869 inclusive.
Lugano,	Pedrotta,	3	2	1864 to 1869 inclusive.
Muri,	Simler,	4	1	1864 to 1869 inclusive.
Platta,	Huonder,	3	5	1864 to 1869 inclusive.
Rathausen,	Bachler,	2	1	1864 to 1867 inclusive.
Reckigen,	de Courten,	3	11	1864 to 1867 inclusive.
Rigi,	Pfister,	3	2	1864 to 1867 inclusive.
St. Gothard,	F. Lombardi,	5	10	1782 to 1785 and 1864 to 1869 both inclusive.
St. Imier,	Déglon,	2	2	1864 to 1869 inclusive.
St. Vittore,	Lorez,	0	4	1868 and 1869.
Schwarzenburg,	Jewzer,	1	5	1867 to 1869 inclusive.
Schwyz,	Lommel,	3	5	1864 to 1869 inclusive.
Solothurn,	Pfahler,	3	0	1864 to 1869 inclusive.
Stanz,	Deschwander,	1	4	1864 to 1866 inclusive.
Sursee,	Bachler,	1	4	1867 to 1869 inclusive.
Valsainte,	Bielmann,	2	0	1866 to 1868 inclusive.
Vaudens,	Chenaux,	3	3	1864 to 1869 inclusive.
Weissenstein,	Mayr,	0	6	1865.
Zug,	Muhlberg,	1	7	1864 to 1866 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
197. Vaudens.	Spring	0	123	22	0	3	4	90	3	856	N. 9° 38′ E.	.07½	....	...	337
	Summer	4	86	11	0	0	3	78	8	494	N. 12 38 W.	.09	....	...	245
	Autumn	15	93	24	2	6	1	68	8	449	N. 11 8 E.	.12	....	...	273
	Winter	0	81	21	0	7	6	195	1	778	N. 70 27 W.	.16½	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	N. 22 20 W.	.09½	....	...	1126
198. Schwarzenburg.	Spring	12	34	9	16	1	5	72	37	265	N. 51 3 W.?	.16	....	...	122
	Summer	5	55	17	30	2	6	28	26	172	N. 37 15 E.?	.13	....	...	92
	Autumn	3	17	1	14	0	7	48	9	214	N. 79 49 W.?	.12	....	...	91
	Winter	14	71	35	46	3	46	192	45	429	N. 78 36 W.	.16	....	...	211
	The year[1]	...	.	...	...	...	...	...	...	...	N. 51 28 W.	.10	....	...	516
199. Fribourg.	Spring	55	122	0	0	17	447	64	116	19	S. 73 43 W.	.46½	....	...	214
	Summer	54	283	0	0	20	336	42	94	20	N. 66 39 W.	.19	....	...	184
	Autumn	7	91	0	0	22	224	27	70	83	S. 70 45 W.	.34	....	...	151
	Winter	37	82	2	0	44	450	25	63	15	S. 55 50 W.	.55½	....	...	243
	The year[1]	...	...	...	...	...	...	...	...	...	S. 71 4 W.	.37	....	...	792
200. Valsainte.	Spring	1	33	37	0	0	58	25	1	542	S. 21 47 W.	.02½	....	...	429
	Summer	4	4	38	0	4	106	32	2	391	S. 43 41 W.	.17	....	...	368
	Autumn	7	5	39	0	0	52	30	1	441	S. 44 20 W.	.06	....	...	364
	Winter	1	9	22	0	0	85	108	0	312	S. 69 20 W.	.28	....	...	452
	The year[1]	...	...	...	...	...	...	..	...	...	S. 56 12 W.	.13	....	...	1613
201. Berne.	Spring	7	57	29	9	6	41	10	13	2	N. 61 10 E.	.18	....	...	184
	Summer	2	59	5	2	1	27	7	12	183	N. 23 50 E.	.11½	....	...	92
	Autumn	0	49	3	1	0	31	11	3	201	N. 13 11 E.	.05	....	...	91
	Winter	6	62	11	15	15	92	44	10	326	S. 56 21 W.	.10½	....	...	213
	The year[1]	...	...	...	...	...	...	...	...	...	N. 59 25 E.	.09	....	...	580

[1] Computed from the resultants for the seasons.

(Nos. 202 to 215.) **Central Switzerland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N.E. or between N. & E.	East.	S.E. or between S. & E.	South.	S.W. or between S. & W.	West.	N.W. or between N. & W.	Calm or variable.			Direction.	Force.	
202. Beatenberg.	Spring	44	49	48	217	199	75	115	283	233	S. 46° 13′ W.	.14½	....	...	367
	Summer	19	25	48	320	227	47	90	271	154	S. 5 4 W.	.21½	....	...	337
	Autumn	60	22	48	200	115	40	58	237	210	S. 49 38 W.	.06½	....	...	303
	Winter	100	56	44	112	128	62	179	317	323	N. 68 22 W.	.23	....	...	392
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 59 W.	.12	....	...	1399
203. Brienz.	Spring	18	9	124	72	6	89	127	39	547	S. 28 5 W.	.07½	....	...	337
	Summer	11	13	130	31	5	39	75	35	739	S. 74 12 E.	.03½	....	...	368
	Autumn	27	12	124	36	3	30	80	28	740	N. 73 55 E.	.04½	....	...	364
	Winter	14	6	131	58	0	83	96	28	722	S. 1 39 E.	.05½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 18 9 E.	.03	....	...	1430
204. St. Imier.	Spring	4	23	0	0	0	75	2	2	292	S. 52 2 W.	.13	....	...	246
	Summer	0	30	2	0	0	41	1	0	166	S. 41 4 W.	.04½	....	...	153
	Autumn	0	35	0	0	0	42	0	0	226	S. 45 0 W.	.02½	....	...	182
	Winter	18	34	0	0	0	83	1	1	134	S. 66 20 W.	.14½	....	...	212
	The year[1]	...	...	...	...	...	...	...	...	...	S. 57 11 W.	·08	....	...	793
205. Weissenstein.	Summer	38	3	11	13	14	71	15	78	42	N. 77 25 W.	.35½	....	...	92
	Autumn	32	2	31	29	20	26	33	23	0	S. 57 59 W.	.09	....	...	91
206. Solothurn.	Spring	9	59	93	51	3	52	141	35	566	S. 89 21 W.	.03	....	...	307
	Summer	9	72	124	9	1	25	48	42	214	N. 53 4 E.	.20	....	...	153
	Autumn	36	40	174	33	10	17	133	31	354	N. 55 9 E.	.08½	....	...	245
	Winter	22	61	138	57	3	95	230	89	689	N. 82 46 W.	.12	....	...	392
	The year[1]	...	...	...	...	...	...	...	...	...	N. 23 41 E.	.05	....	...	1097
208. Sursee.	Spring	2	14	8	4	3	6	102	33	269	N. 76 59 W.	.25½	....	...	122
	Summer	2	23	6	4	2	1	13	14	232	N. 3 46 E.	.07½	....	...	92
	Autumn	5	15	3	0	2	1	26	14	223	N. 45 16 W.	.11	....	...	91
	Winter	1	36	13	14	1	7	121	33	400	N. 71 25 W.	.17	....	...	181
	The year[1]	...	...	...	...	...	...	...	...	...	N. 61 35 W.	.14	....	...	486
209. Interlaken.	Spring	4	69	38	3	0	57	196	34	641	N. 78 39 W.	.17	....	...	337
	Summer	5	72	35	10	2	28	314	107	553	N. 72 2 W.	.29½	....	...	368
	Autumn	2	59	21	11	1	48	136	47	636	N. 75 32 W.	.14½	....	...	303
	Winter	3	63	34	19	0	105	160	32	903	S. 83 56 W.	.12½	....	...	423
	The year[1]	...	...	...	...	...	...	...	...	...	N. 78 15 W.	.18	....	...	1431
210. Grindelwald.	Spring	0	1	0	8	0	0	8	6	61	S. 83 7 W.??	.07	....	...	31
	Summer	2	0	13	4	4	7	12	8	133	S. 58 44 W.?	.04½	....	...	61
	Autumn	0	3	3	9	18	4	18	2	276	S. 24 27 W.?	.08	....	...	121
	Winter	0	2	1	1	4	3	2	3	256	S. 43 29 W.?	.01½	....	...	90
	The year[1]	...	...	...	...	...	...	...	...	...	S. 52 37 W.	.05	....	...	303
211. Muri.	Spring	49	117	76	90	15	63	236	175	358	N. 46 14 W.	.16	....	...	368
	Summer	50	135	129	68	14	59	167	177	382	N. 20 11 W.	.15	....	...	368
	Autumn	66	112	89	73	10	84	126	155	456	N. 29 20 W.	.13	....	...	364
	Winter	35	114	69	85	10	55	308	104	549	N. 69 11 W.	.17	....	...	392
	The year[1]	...	...	...	...	...	...	...	...	...	N. 42 29 W.	.14½	....	...	1492
212. Rathausen.	Spring	8	32	4	10	16	4	24	22	522	N. 23 12 W.	.03½	....	...	215
	Summer	9	29	4	7	28	5	27	17	615	N. 68 57 W.	.02	....	...	245
	Autumn	0	19	1	3	5	4	9	3	321	N. 24 57 E.	.01½	....	...	121
	Winter	9	25	3	4	15	11	58	7	431	N. 82 44 W.	.08½	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 59 12 W.	.03	....	...	761
213. Stanz.	Spring	11	3	13	10	8	6	46	5	·97	S. 85 11 W.	.16	....	...	184
	Summer	15	4	12	4	1	1	6	19	1	N. 5 19 W.?	.42½	....	...	122
	Autumn	0	0	6	1	8	2	10	0	76	S. 24 58 W.?	11	....	...	91
	Winter	9	4	54	30	13	26	80	20	126	S. 52 21 W.	.12	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 54 47 W.	.10½	....	...	577
214. Engelberg.	Spring	16	32	42	139	34	162	275	45	669	S. 55 41 W.	.22	....	...	367
	Summer	11	26	22	91	14	182	284	47	585	S. 67 4 W.	.29½	....	...	337
	Autumn	7	22	24	171	42	171	152	39	606	S. 30 56 W.	.22	....	...	333
	Winter	14	89	65	189	16	65	148	50	964	S. 21 10 E.	.05½	....	...	541
	The year[1]	...	...	...	...	...	...	...	...	...	S. 48 41 W.	.18	....	...	1578
215. Grimsel.	Spring	34	51	31	218	28	113	180	98	387	S. 41 21 W.	.14½	....	...	244
	Summer	10	37	24	133	15	72	80	71	264	S. 26 38 W.	.12	....	...	184
	Autumn	15	24	19	228	12	97	114	81	208	S. 15 38 W.	.20	....	...	182
	Winter	20	20	32	592	66	204	196	121	422	S. 4 22 E.	.30½	....	...	330
	The year[1]	...	...	...	...	...	...	...	...	...	S. 13 58 W.	.18	....	...	940

[1] Computed from the resultants for the seasons.

(Nos. 216 to 229.) **Central Switzerland.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
216. Reckigen.	Spring	374	327	36	9	16	137	67	43	243	N. 9° 49′ E.	.42	....	...	337
	Summer	301	394	43	13	30	268	97	53	170	N. 1 0 E.	.28½	....	...	368
	Autumn	308	230	36	8	12	236	52	40	328	N. 7 46 W.	.25½	....	...	364
	Winter	334	302	8	0	5	107	72	33	317	N. 5 53 E.	.42	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 2 50 E.	.34	....	...	1430
217. Zug.	Spring	4	49	0	0	10	61	29	11	325	S. 81 34 W.	.09½	....	...	184
	Summer	9	18	0	0	2	20	4	6	123	N. 44 30 W.?	.07½	....	...	122
	Autumn	4	13	0	1	5	9	10	1	168	N. 75 41 W.?	.03½	....	...	91
	Winter	7	25	0	0	4	64	27	11	330	S. 74 56 W.	.14	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 35 W.	.08	....	...	577
218. Rigi Kulm.	Spring	23	31	48	45	181	22	295	83	400	S. 64 53 W.	.26	....	...	368
	Summer	21	35	33	6	75	3	150	47	305	S. 88 53 W.	.18½	....	...	184
	Autumn	5	17	59	24	183	23	276	45	430	S. 54 40 W.	.27	....	...	273
	Winter	2	20	83	53	191	52	814	78	509	S. 75 53 W.	.44	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 70 42 W.	.28½	....	...	1186
219. Schwyz.	Spring	10	7	2	6	12	15	10	44	465	N. 64 38 W.	.08	....	...	276
	Summer	18	5	5	4	3	11	9	64	644	N. 43 37 W.	.09½	....	...	306
	Autumn	12	8	11	21	10	9	11	68	531	N. 44 30 W.	.07	....	...	303
	Winter	13	5	3	4	7	12	9	106	592	N. 48 38 W.	.14½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 49 52 W.	.09½	....	...	1246
220. Gersau.	Spring	0	0	0	0	0	3	6	0	247	S. 75 24 W.??	.03½	....	...	92
	Summer	0	0	4	4	0	3	2	0	249	S. 28 42 E.??	.02	....	...	92
	Autumn	0	0	0	12	9	3	0	0	238	S. 17 58 W.??	.09	....	...	91
	Winter	1	3	0	3	0	10	0	16	315	N. 69 40 W.?	.05	....	...	120
	The year[1]	...	...	...	...	...	...	...	...	...	S. 47 25 W.?	.03½	....	...	395
221. Altdorf.	Spring	18	2	1	139	37	11	19	143	388	S. 50 21 W.	.04½	....	...	245
	Summer	8	1	5	20	23	1	96	110	461	N. 72 26 W.	.22½	....	...	214
	Autumn	17	0	0	79	26	0	9	16	256	S. 33 35 E.	.16	....	...	151
	Winter	32	3	4	70	10	13	19	57	446	N. 65 47 W.	.02	....	...	242
	The year[1]	...	...	...	...	...	...	...	...	...	S. 64 22 W.	.05	....	...	852
222. Andermatt.	Spring	0	96	1	4	1	136	1	6	613	S. 46 50 W.	.05	....	...	276
	Summer	23	132	0	4	2	33	2	3	510	N. 37 16 E.	.16	....	...	276
	Autumn	0	68	0	0	0	86	1	5	493	S. 61 57 W.	.03	....	...	273
	Winter	0	121	3	6	0	161	1	10	794	S. 48 50 W.	.03½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 7 54 E.	.01½	....	...	1186
223. Airolo.	Spring	33	0	0	0	0	0	0	0	76	North.	.27			
	Winter	68	15	0	1	1	0	0	6	214	N. 4 59 E.	.26½			
224. Einsiedeln.	Spring	129	149	32	153	50	180	211	442	69	N. 57 11 W.	.34	....	...	369
	Summer	125	86	22	136	26	118	206	632	129	N. 52 33 W.	.47½	....	...	368
	Autumn	58	112	79	94	20	119	137	323	212	N. 49 4 W.	.28½	....	...	273
	Winter	54	109	58	233	61	270	309	227	207	S. 70 52 W.	.25	....	...	389
	The year[1]	...	...	...	...	...	...	...	...	...	N. 62 56 W.	.31	....	...	1399
225. Platta.	Spring	19	13	1	2	3	416	0	7	661	S. 47 17 W.	.35	....	...	337
	Summer	26	10	0	1	5	193	0	10	691	S. 53 2 W.	.18	....	...	276
	Autumn	14	2	1	6	4	383	0	9	606	S. 46 26 W.	.36½	....	...	273
	Winter	12	23	4	12	16	695	0	7	755	S. 44 56 W.	.44½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 47 5 W.	.33½	....	...	1247
226. Faido.	Spring	84	0	0	3	1	0	41	42	425	N. 31 48 W.	.22	....	...	184
	Summer	58	0	3	1	1	0	53	35	266	N. 42 25 W.?	.26½	....	...	123
	Autumn	11	0	1	0	0	0	18	13	246	N. 52 23 W.?	.11½	....	...	91
	Winter	38	0	0	0	0	0	28	21	216	N. 39 2 W.?	.22½	....	...	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 40 3 W.	.20½	....	...	488
227. Glarus.	Spring	127	18	7	58	35	3	14	119	373	N. 15 11 W.	.20	....	...	215
	Summer	134	12	9	21	20	1	7	51	276	N. 4 34 W.	.27	....	...	153
	Autumn	65	9	4	24	18	1	17	63	307	N. 23 35 W.	.17	....	...	153
	Winter	45	17	9	41	14	1	10	57	402	N. 1 4 W.	.09	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 11 30 W.	.18	....	...	701
228. Lugano.	Spring	99	128	1	81	55	7	0	2	742	N. 62 38 E.	.14½	....	...	337
	Summer	37	71	4	44	55	13	0	0	657	S. 83 56 E.	.08½	....	...	276
	Autumn	62	41	4	30	21	10	0	7	702	N. 42 7 E.	.07	....	...	273
	Winter	74	75	0	13	6	3	0	5	715	N. 26 33 E.	.14	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	N. 53 55 E.	.10	....	...	1157
229. St. Vittore.	Autumn	2	0	0	0	0	3	9	0	68	S. 89 23 W.??	.13½	....	...	30
	Winter	0	1	9	13	1	12	10	6	237	S. 15 35 W.?	.05	....	...	90

Relative Prevalence of Winds from the Different Points of the Compass: columns North to Calm or variable.

[1] Computed from the resultants for the seasons.

(Nos. 230 to 237.) **Central Switzerland.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
230. Auen.	Spring	145	57	32	67	113	39	8	19	518	N. 81° 19′ E.	.07	....	...	337
	Summer	213	39	26	107	69	25	7	57	461	N. 28 27 E.	.13½	....	...	306
	Autumn	111	16	23	90	99	12	2	46	389	S. 73 30 E.	.07	....	...	242
	Winter	75	35	62	118	90	22	3	25	694	S. 61 53 E.	.13½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 82 12 E.	.08	....	...	1246
231. Bernhardin.	Spring	306	0	0	0	220	0	1	0	64	N. 0 40 W.	.12	....	...	184
	Summer	171	7	2	3	93	1	1	1	89	N. 4 42 E.?	.22	....	...	92
	Autumn	322	0	0	0	386	0	0	0	76	South.	.08	....	...	182
	Winter	588	0	0	0	309	29	18	13	143	N. 10 6 W.	.24½	....	...	270
	The year[1]	...	...	...	...	...	...	...	...	...	N. 2 55 W.	.13	....	...	728

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
232. St. Gothard, 1782, 1783, 1784 and 1785.[2]																						
January	0	0	0	0	0	15	12	0	18	0	0	0	0	3	30	0	...	S. 17 47 E.?	.20	....	...	31
February	0	0	0	0	1	6	9	4	2	0	0	0	0	5	57	0	...	N. 47 35 W.?	.49	....	...	28
March	0	0	0	0	0	0	31	0	2	0	0	0	1	2	54	0	...	S. 54 47 W.?	.26	....	...	31
April	0	0	0	0	0	0	14	0	9	0	0	0	0	1	64	1	...	N. 52 58 W.?	.52	....	...	30
May	0	0	0	0	0	0	24	0	4	0	0	0	0	0	60	0	...	N. 49 52 W.?	.38	....	...	31
June	0	0	0	0	0	0	15	0	3	0	0	0	0	1	68	0	...	N. 47 44 W.?	.59⅓	....	...	30
July	0	0	0	0	0	1	19	0	9	0	0	0	0	2	60	0	...	N. 55 43 W.?	.40	....	...	31
August	0	0	0	0	0	3	18	0	20	0	0	0	0	0	47	0	...	S. 87 56 W.?	.20	....	...	31
September	0	0	0	0	6	8	20	0	14	0	0	0	0	0	35	0	...	S. 23 19 E.?	.08½	....	...	30
October	0	0	1	0	4	2	15	0	9	0	0	0	0	2	56	0	...	N. 49 33 W.?	.36	....	...	31
November	0	0	0	0	5	7	15	1	20	0	0	0	0	1	34	0	...	S. 8 50 W.?	.12	....	...	30
December	0	0	0	0	1	1	47	1	16	0	0	0	0	0	20	0	...	S. 30 27 E.?	.49	....	...	31
Spring	0	0	0	0	0	0	69	0	15	0	0	0	1	3	178	1	...	N. 51 42 W.?	.39	....	...	92
Summer	0	0	0	0	0	4	52	0	32	0	0	0	0	3	175	0	...	N. 57 49 W.?	.38	....	...	92
Autumn	0	0	1	0	15	17	50	1	43	0	0	0	0	3	125	0	...	S. 87 23 W.?	.11	....	...	91
Winter	0	0	0	0	2	22	68	5	36	0	0	0	0	8	107	0	...	S. 9 56 W.?	.11	....	...	90
The year	10	0	4	1	32	109	724	259	514	129	60	4	15	287	2006	66	...	N. 82 56 W.	.26	....	...	1461
233. St. Gothard, 1865 to 1869.																						
Spring	410	...	0	...	0	...	83	...	125	...	0	...	0	...	0	...	93	N. 14 32 E.	.33	....	...	183
Summer	457	...	0	...	2	...	55	...	65	...	0	...	0	...	0	...	95	N. 6 36 E.?	.52½	....	...	123
Autumn	399	...	0	...	0	...	184	...	143	...	0	...	0	...	0	...	188	N. 45 58 E.	.20	....	...	212
Winter	514	...	0	...	0	...	15	...	226	...	32	...	0	...	0	...	138	N. 2 42 W.	.27½	....	...	180
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 12 16 E.	.32	....	...	698
234. Faulhorn.																						
Summer	13	4	13	3	7	0	9	7	16	3	113	42	69	6	16	1	98	S. 66 57 W.?	.47	....	...	124
Autumn	1	2	4	2	0	2	4	2	4	11	68	15	3	1	0	0	23	S. 41 40 W.?	.62½	....	...	91
235. Airolo.																						
Spring	33	...	0	...	0	...	0	...	3	...	0	...	0	...	0	...	76	North??	.27	....	...	30
Winter	68	...	15	...	0	...	1	...	1	...	0	...	0	...	6	...	214	N. 4 59 E.?	.26½	....	...	90
236. Nos. 232 and 233 combined.[3]																						
Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 22 0 W.	.30			
Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 20 0 W.	.38½			
Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 14 0 E.	.07			
Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 11 0 W.	.08½			
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 29 0 W.	.20			
237. Central Switzerland—aggregate.																						
Spring	2055	0	1705	0	735	0	1566	0	1216	0	2287	0	2416	3	2086	0	12029	N. 72 5 W.	.10	N. 29° W.	.01½	8457
Summer	1864	4	1779	3	796	4	1206	7	877	3	1859	42	2022	9	2188	1	10664	N. 52 40 W.	.11	N. 02½ E.	.04½	7356
Autumn	1673	2	1131	2	843	19	1438	3	1257	11	1843	15	1624	4	1512	0	10881	S. 87 34 W.	.06	S. 48 E.	.04	7218
Winter	2160	0	1569	0	920	22	1872	5	1302	0	2961	0	3463	8	1709	0	14803	S. 85 46 W.	.11	S. 34½ W.	.04	9422
The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 14 W.	.09	....	...	32453

[1] Computed from the resultants for the seasons.
[2] Months and seasons for the year 1785 only.
[3] Computed by combining the resultants by plotting.

(Nos. 238 to 248.) **Southwestern Switzerland.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bellinzona,	Tschudy,	3	2	1864 to 1869 inclusive.
Bex,	C. Rosset,	1	10	1864 to 1869 inclusive.
Gliss,	X. In-Albon,	1	7	December, 1864, to June, 1866, inclusive.
Grachen,	Tscheinen,	3	7	1864 to 1869.
Martigny,	Gross,	3	6	1864 to 1869.
Mendrisio,	Rusca Torriani,	1	2	1864, 1865 and 1866.
St. Bernard,	....	10	5	1851, 1852, 1853, 1855, 1857 and 1863 to 1869 inclusive.
Simplon,	Frossard,	5	2	1863 to 1869 inclusive.
Sion,	Branno,	3	8	1864 to 1869 inclusive.
Zermatt,	Ruden,	0	11	December, 1864, to October, 1865, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
238. Bex.	Spring	15	10	3	3	81	53	14	20	244	S. 32° 21′ W.	.22½	....	...	216
	Summer	6	11	3	0	7	21	18	6	152	S. 81 43 W.	.12	....	...	153
	Autumn	0	0	0	0	23	13	5	16	76	S. 50 43 W.?	.25	....	...	91
	Winter	18	5	1	8	107	6	4	3	256	S. 0 6 W.	.22	....	...	270
	The year[1]	...	...	...	...	...	...	...	...	...	S. 35 59 W.	.18½	....	...	730
239. Martigny.	Spring	282	22	46	101	8	12	26	252	568	N. 11 37 W.	.30	....	...	337
	Summer	477	0	24	15	7	10	22	131	534	N. 9 5 W.	.45	....	...	306
	Autumn	174	17	26	73	0	2	24	72	590	N. 4 8 E.	.19	....	...	273
	Winter	150	4	25	39	4	16	42	68	7	N. 16 14 W.	.46½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 10 14 W.	.35	....	...	1277
240. St. Bernard.	Spring	0	4852	0	0	0	2337	0	0	706	Northeast.	.32	....	...	889
	Summer	1	4342	0	0	0	1795	0	0	565	N. 44 59 E.	.38	....	...	828
	Autumn	0	3577	0	1	0	2840	0	0	560	N. 45 5 E.	.15½	....	...	819
	Winter	0	4702	0	0	0	2539	0	0	814	Northeast.	.27	....	...	902
	The year[1]	...	...	...	...	...	...	...	...	...	N. 45 1 E.	.28	....	...	3438
241. Sion.	Spring	10	30	12	6	17	118	185	19	560	S. 76 12 W.	.26½	....	...	337
	Summer	5	13	5	7	8	269	181	14	511	S. 63 41 W.	.40	....	...	337
	Autumn	5	25	6	2	6	79	74	3	593	S. 70 12 W.	.14½	....	...	304
	Winter	11	21	10	19	11	45	93	22	833	S. 81 44 W.	.09½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 70 20 W.	.22	....	...	1339
242. Gliss.	Spring	10	92	40	108	5	226	5	11	268	S. 3 12 E.	.20½	....	...	184
	Summer	2	32	7	25	0	183	7	16	211	S. 42 6 W.?	.31	....	...	122
	Autumn	7	39	15	31	1	60	11	23	119	S. 19 41 W.?	.05	....	...	91
	Winter	2	38	23	47	0	164	1	10	395	S. 19 52 W.	.17	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	S. 22 45 W.	.17½	....	...	577
243. Grachen.	Spring	160	86	13	2	17	46	66	4	655	N. 8 36 W.	.16½	....	...	337
	Summer	142	145	33	2	12	37	82	31	631	N. 1 44 E.	.20½	....	...	338
	Autumn	35	22	1	2	0	11	39	4	657	N. 35 36 W.	.07	....	...	273
	Winter	53	24	18	5	50	48	56	8	847	S. 78 16 W.	.05	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 9 45 W.	.10½	....	...	1309
244. Zermatt.	Spring	15	39	3	2	19	74	4	6	127	S. 47 49 W.?	.13½	....	...	92
	Summer	24	43	1	0	8	57	2	2	151	S. 58 37 W.?	.05	....	...	92
	Autumn	12	30	0	0	5	32	0	1	109	N. 15 22 W.?	.04	....	...	61
	Winter	8	11	2	0	27	67	2	1	155	S. 30 42 W.?	.29	....	...	90
	The year[1]	...	...	...	...	...	...	...	...	...	S. 47 53 W.	.10	....	...	335
245. Simplon.	Spring	274	830	156	204	877	2560	349	164	450	N. 36 49 W.	.39½	....	...	460
	Summer	280	1199	321	226	754	1966	394	278	443	S. 8 18 W.	.17	....	...	460
	Autumn	170	1147	223	254	744	2142	78	159	397	S. 20 4 W.	.27	....	...	425
	Winter	280	1837	182	182	578	3206	480	211	467	S. 45 57 W.	.24	....	...	542
	The year[1]	...	...	...	...	...	...	...	...	...	S. 30 16 W.	.26	....	...	1887
246. Bellinzona.	Spring	205	17	0	2	12	7	0	0	867	N. 2 2 E.	.18	....	...	337
	Summer	48	12	2	3	8	0	0	0	767	N. 15 13 E.	.06	....	...	276
	Autumn	59	26	1	12	7	1	0	0	663	N. 23 56 E.	.08½	....	...	273
	Winter	136	20	1	4	8	0	0	0	708	N. 7 21 E.	.16	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	N. 9 18 E.	.12	....	...	1157
247. Mendrisio.	Spring	34	10	7	6	7	0	4	17	66	N. 3 8 E.	.28	....	...	153
	Summer	20	6	2	6	6	4	7	6	132	N. 13 7 W.?	.08½	....	...	93
	Autumn	19	7	5	1	0	0	0	3	1	N. 18 37 E.?	.74½	....	...	60
	Winter	35	12	2	2	2	2	10	20	391	N. 14 30 W.	.11½	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 9 54 E.	.30	....	...	486
248. S'thwest'n Switzerland—aggregate.	Spring	1005	5988	280	434	1043	5433	653	493	4511	N. 3 13 W.	.02	N. 80½° W.	.01	3342
	Summer	1005	5803	398	284	810	4342	713	484	4097	N. 22 52 E.	.08	N. 24½ E.	.06	3005
	Autumn	481	4890	277	376	786	5180	231	281	3765	S. 9 3 W.	.03½	S. 11½ W.	.05½	2670
	Winter	693	6674	264	306	787	6093	688	343	4900	N. 6 33 W.	.01½	S. 25 W.	.01	3530
	The year[1]	...	...	...	...	...	...	...	...	...	N. 16 14 E.	.02	....	...	12547

[1] Computed from the resultants for the seasons.

(Nos. 249 to 273.) **Eastern Switzerland.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Altstatten,	Wehrli,	3	6	1864 to 1869 inclusive.
Bevers,	Krattli,	3	10	1864 to 1869 inclusive.
Bernina,	Isepponi,	2	5	1865 to 1869 inclusive.
Brusio,	Leonhardi,	2	9	1865 to 1869 inclusive.
Castasegna,	Garbald,	3	5	1864 to 1869 inclusive.
Chur,	Killias,	4	1	1864 to 1869 inclusive.
Churwalden,	Brugger,	3	6	1864 to 1869 inclusive.
Closters,	Rieder,	3	11	1864 to 1869 inclusive.
Davos,	Spengler,	1	11	1867 to 1869 inclusive.
Ilanz,	Fohr,	1	4	December, 1864, to March, 1866, inclusive.
Julier,	Gianiel,	3	2	1864 to 1869 inclusive.
Marschlins,	Salis,	3	9	1864 to 1869 inclusive.
Reichenau,	Welz,	3	3	1864 to 1869 inclusive.
Remus,	Porta,	2	7	1864 to 1868 inclusive.
St. Gallen,	Dierauer,	2	2	1864 to 1869 inclusive.
Sargans,	Geel,	3	5	1864 to 1869 inclusive.
Schuls,	Peer,	0	6	1868 and 1869.
Sils,	Caviezel,	4	0	1864 to 1869 inclusive.
Splugen,	Crottogini,	3	6	1864 to 1869 inclusive.
Stalla,	Schmid,	1	9	1864 to 1867 inclusive.
Thusis,	Bunzli,	3	1	1864 to 1869 inclusive.
Trogen,	Rothen,	3	3	1864 to 1869 inclusive.
Wildhaus,	Giger,	1	5	1864 to 1866 inclusive.
Zernetz,	Guidon,	3	1	1864 to 1868 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
249. St. Gallen.	Spring	12	31	14	0	12	32	32	17	377	N. 69° 48′ W.	.06	....	...	215
	Summer	3	1	44	12	7	54	10	0	393	S. 5 44 E.	.09½	....	...	184
	Autumn	1	1	18	0	1	4	0	0	67	S. 82 24 E.??	.17½	....	...	30
	Winter	14	16	15	11	17	163	63	33	747	S. 61 48 W.	.18	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	S. 46 41 E.	.06½	....	...	700
250. Wildhaus.	Spring	3	42	6	2	4	104	18	10	92	S. 57 31 W.	.26	....	...	153
	Summer	0	23	5	3	0	64	11	0	187	S. 47 11 W.?	.15½	....	...	92
	Autumn	1	22	2	3	0	25	10	0	0	S. 67 58 W.?	.14	....	...	91
	Winter	1	38	18	10	0	156	131	18	159	N. 69 12 W.	.40½	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	S. 79 44 W.	.21½	....	...	516
251. Reichenau.	Spring	142	310	0	0	200	202	70	0	134	N. 19 8 E.	.02	....	...	276
	Summer	127	460	0	0	121	115	66	2	200	N. 35 50 E.	.28½	....	...	276
	Autumn	83	266	0	0	160	199	120	3	204	S. 59 49 W.	.06	....	...	273
	Winter	113	243	0	0	271	245	204	1	190	S. 52 25 W.	.20½	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	N. 24 19 W.	.02½	....	...	1096
252. Ilanz.	Spring	1	4	46	0	2	1	51	4	5	N. 55 21 W.?	.06	....	...	123
	Summer	4	3	47	1	2	0	10	3	15	N. 81 39 E.?	.45	....	...	92
	Autumn	2	3	31	0	8	1	23	0	3	S. 64 0 E.?	.14½	....	...	91
	Winter	2	5	30	1	3	2	109	2	15	N. 88 39 W.	.47½	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	N. 48 56 E.	.02	....	...	486
253. Thusis.	Spring	19	0	2	24	107	18	9	1	683	S. 1 42 W.	.13½	....	...	277
	Summer	23	10	0	22	23	4	0	0	750	S. 60 16 E.	.03	....	...	276
	Autumn	1	1	2	21	66	5	0	0	553	S. 9 38 E.	.13	....	...	243
	Winter	1	1	0	3	64	11	1	2	1015	S. 5 56 W.	.06½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 5 57 E.	.08½	....	...	1157
254. Splugen.	Spring	30	65	58	15	130	67	18	2	593	S. 23 22 E.	.12½	....	...	307
	Summer	26	79	35	17	83	46	9	1	629	S. 53 26 E.	.08	....	...	307
	Autumn	23	99	30	21	121	59	14	5	685	S. 34 27 E.	.09	....	...	334
	Winter	48	95	39	2	98	42	31	3	717	S. 64 1 E.	.04½	....	...	330
	The year[1]	...	...	...	...	...	...	...	...	...	S. 38 54 E.	.08½	....	...	1278

[1] Computed from the resultants for the seasons.

(Nos. 255 to 267.) **Eastern Switzerland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
255. Trogen.	Spring	28	12	1	18	17	48	137	20	536	S. 85° 25′ W.	.20	....	...	245
	Summer	27	1	0	14	5	41	99	40	655	N. 77 37 W.	.17	....	...	276
	Autumn	14	8	4	49	67	53	99	11	703	S. 41 50 W.	.15	....	...	303
	Winter	12	2	1	20	66	198	260	26	697	S. 64 22 W.	.34½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 73 0 W.	.20½	....	...	1185
256. Altstatten.	Spring	17	40	7	7	36	58	14	16	771	S. 45 50 W.	.04	....	...	337
	Summer	37	43	4	2	10	27	18	16	769	N. 14 38 W.	.05½	....	...	306
	Autumn	10	9	2	4	44	43	10	8	843	S. 32 17 W.	.06½	....	...	273
	Winter	3	11	0	0	28	115	17	5	946	S. 48 43 W.	.12	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 15 W.	.05	....	...	1277
257. Sargans.	Spring	4	1	385	205	145	0	389	0	110	S. 26 25 E.	.26	....	...	337
	Summer	5	1	323	96	183	1	336	0	4	S. 12 35 E.	.26½	....	...	306
	Autumn	0	0	396	147	118	0	252	0	81	S. 49 29 E.	.33	....	...	273
	Winter	14	3	519	154	72	0	393	0	176	S. 55 13 E.	.21½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 35 38 E.	.26	....	...	1277
258. Marsch-lins.	Spring	100	85	18	105	304	37	25	231	465	N. 37 31 W.	.07½	....	...	337
	Summer	146	83	42	76	151	18	2	368	560	N. 25 58 W.	.19	....	...	368
	Autumn	110	57	28	156	134	8	0	141	526	N. 89 41 E.	.06½	....	...	303
	Winter	123	46	12	126	217	17	6	158	661	S. 4 22 E.	.04	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	N. 18 3 W.	.05	....	...	1369
259. Chur.	Spring	44	229	53	127	19	110	41	62	543	N. 66 2 E.	.12½	....	...	337
	Summer	5	373	35	246	3	47	22	47	437	N. 76 34 E.	.32½	....	...	337
	Autumn	15	275	17	270	16	172	13	43	503	S. 68 40 E.	.19	....	...	364
	Winter	19	216	9	284	6	145	12	63	923	S. 65 25 E.	.13½	....	...	451
	The year[1]	...	...	...	...	...	...	...	...	...	N. 89 52 E.	.18½	....	...	1489
260. Chur-walden.	Spring	24	55	3	220	35	268	0	317	472	S. 66 43 W.	.17	....	...	337
	Summer	43	114	1	102	18	112	1	227	473	N. 37 9 W.	.13	....	...	306
	Autumn	15	41	0	265	17	270	0	123	448	S. 13 6 W.	.23	....	...	273
	Winter	5	14	1	146	24	336	5	194	694	S. 51 20 W.	.24	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 43 W.	.14½	....	...	1277
261. Casta-segna.	Spring	0	292	8	1	3	106	6	4	627	N. 45 11 E.	.18	....	...	337
	Summer	1	158	2	8	1	74	10	13	665	N. 37 15 E.	.08½	....	...	307
	Autumn	0	207	5	4	1	22	3	2	601	N. 46 16 E.	.22	....	...	273
	Winter	14	379	6	4	1	4	3	3	671	N. 43 51 E.	.37	....	...	333
	The year[1]	...	...	...	...	...	...	...	...	...	N. 43 46 E.	.21	....	...	1250
262. Closters.	Spring	284	25	77	269	209	6	26	194	387	N. 73 14 E.	.08½	....	...	368
	Summer	181	8	19	91	108	4	13	361	489	N. 34 20 W.	.24½	....	...	337
	Autumn	223	14	42	204	174	15	5	161	391	N. 83 15 E.	.05½	....	...	333
	Winter	204	39	123	304	132	12	7	49	509	S. 74 12 E.	.23½	....	...	391
	The year[1]	...	...	...	...	...	...	...	...	...	N. 50 57 E.	.07	....	...	1429
263. Davos.	Spring	10	97	20	2	4	18	3	2	351	N. 49 41 E.	.19	....	...	153
	Summer	6	143	7	0	0	15	18	6	412	N. 36 46 E.	.21	....	...	184
	Autumn	10	96	1	1	1	33	14	1	413	N. 39 46 E.	.12	....	...	182
	Winter	6	69	18	0	2	17	12	0	461	N. 46 23 E.	.10	....	...	181
	The year[1]	...	...	...	...	...	...	...	...	...	N. 42 51 E.	.15½	....	...	700
264. Bevers.	Spring	20	110	11	0	36	261	133	30	560	S. 67 54 W.	.23	....	...	337
	Summer	36	86	7	2	79	274	191	20	587	S. 63 32 W.	.28½	....	...	368
	Autumn	12	83	3	2	37	277	109	30	591	S. 60 17 W.	.25	....	...	333
	Winter	24	111	5	4	25	194	91	27	772	S. 74 54 W.	.13½	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 65 24 W.	.22½	....	...	1399
265. Julier.	Spring	3	16	126	9	11	248	11	47	463	S. 27 34 W.	.17½	....	...	276
	Summer	0	5	43	1	4	356	42	48	378	S. 52 1 W.	.40½	....	...	246
	Autumn	0	7	206	5	1	278	13	5	472	S. 0 24 E.	.19½	....	...	273
	Winter	8	47	335	24	2	436	2	79	441	S. 4 44 E.	.16	....	...	361
	The year[1]	...	...	...	...	...	...	...	...	...	S. 27 37 W.	.21½	....	...	1156
266. Stalla.	Spring	61	4	0	201	114	11	0	33	357	S. 32 47 E.	.27	....	...	215
	Summer	60	12	14	109	31	18	0	37	262	S. 66 41 E.	.12	....	...	153
	Autumn	40	0	6	138	56	4	6	28	346	S. 37 48 E.?	.19½	....	...	91
	Winter	41	6	11	197	52	4	0	20	333	S. 45 36 E.	.29	....	...	180
	The year[1]	...	...	...	...	...	...	...	...	...	S. 42 47 E.	.21½	....	...	639
267. Sils.	Spring		179	53	14	28	171	57	12	580	N. 13 4 E.	.01	....	...	337
	Summer	65	105	35	9	30	166	89	25	617	N. 88 19 W.	.09½	....	...	368
	Autumn	43	179	55	21	69	145	48	20	649	S. 85 12 E.	.02½	....	...	364
	Winter	48	223	123	54	61	106	19	14	727	N. 79 5 E.	.16	....	...	391
	The year[1]	...	...	...	...	...	...	...	...	...	N. 77 25 E.	.05	....	...	1460

[1] Computed from the resultants for the seasons.

(Nos. 268 to 273.) **Eastern Switzerland.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
268. Zernetz.	Spring	22	1	0	39	231	50	30	185	494	S. 50° 7′ W.	.02	....	...	307
	Summer	20	4	0	16	108	39	28	219	523	N. 81 5 W.	.21	....	...	337
	Autumn	13	6	4	39	230	48	33	172	403	S. 45 1 W.	.23	....	...	273
	Winter	16	0	1	9	218	50	28	112	403	S. 36 45 W.	.25½	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	S. 57 2 W.	.16	....	...	1188
269. Bernina.	Spring	124	234	9	14	0	30	0	3	248	N. 25 27 E.	.37½	....	...	183
	Summer	111	123	0	0	0	6	0	1	417	N. 22 52 E.	.32	....	...	184
	Autumn	148	18	5	3	0	4	0	15	305	N. 2 12 E.	.33½	....	...	213
	Winter	225	454	18	25	0	17	6	17	604	N. 31 44 E.	.45½	....	...	270
	The year[1]	...	...	...	...	...	...	...	...	...	N. 20 11 E.	.36	....	...	850
270. Brusio.	Spring	250	0	0	0	182	0	0	0	287	North.	.23½	....	...	214
	Summer	173	0	0	0	148	0	0	0	250	North.	.04½	....	...	184
	Autumn	256	0	0	0	133	0	0	0	254	North.	.19	....	...	273
	Winter	428	0	0	0	74	0	16	0	532	North.	.34	....	...	333
	The year[1]	...	...	...	...	...	...	...	...	...	North.	.20	....	...	1004
271. Remus.	Spring	40	11	13	35	39	37	10	27	518	S. 22 54 W.	.03½	....	...	215
	Summer	39	26	1	10	26	27	9	32	290	N. 41 3 W.	.08	....	...	215
	Autumn	24	14	1	21	52	17	14	45	339	S. 67 45 W.	.06½	....	...	182
	Winter	49	17	2	10	31	39	22	35	319	N. 69 18 W.	.11	....	...	271
	The year[1]	...	...	...	...	...	...	...	...	...	N. 79 29 W.	.06	....	...	883
272. Schuls.	Oct. & Nov.	0	2	3	0	0	0	0	1	177	N. 60 16 E.?	.02½	....	...	61
	Winter	0	1	4	2	0	0	4	8	250	N. 35 34 W.	.02½	....	...	90
273. Eastern Switzerland—aggre'te.	Spring	1275	1843	910	1307	1868	1883	1080	1217	9653	S. 16 36 W.	.03½	S. 20° W.	.01½	6223
	Summer	1138	1861	664	837	1141	1508	984	1466	9962	N. 36 41 W.	.04½	N. 21 W.	.06	6009
	Autumn	1040	1407	861	1374	1506	1682	786	814	9557	S. 14 40 E.	.06	S. 28 E.	.04½	5702
	Winter	1418	2036	1290	1390	1464	2309	1442	869	12962	S. 2 12 E.	.02½	S. 45½ E.	.01	7282
	The year[1]	...	...	...	...	...	...	...	...	...	S. 14 23 W.	.02	....	...	25216

[1] Computed from the resultants for the seasons.

(Nos. 274 to 304.) **Luxemburg and Southern Germany.**

Observed at the following places, viz.:—

Anspach, Bavaria, during the year 1843.

Bamberg, Bavaria, from December, 1854, to November, 1857, inclusive.

Burglengenfeld, Bavaria, during the year 1843.

Carlsruhe, Baden, during the years 1819, 1834 and 1835.

Giengen, Bavaria, during the year 1841.

Giengen on the Brenz, Bavaria (or Wurtemberg?) during the year 1841.

Gunzenhausen, Bavaria, during the year 1843.

Hohenpeissenberg, Bavaria. (See No. 312.)

Ingolstadt, Bavaria, during the year 1781.

Issny, Wurtemberg, during the year 1841.

Ittendorf, Bavaria. (See No. 311.)

Luxemburg, during the years 1855, 1856 and 1857.

Manheim, Baden, during the years 1781, 1784 and 1785, and from December, 1854, to November, 1855, inclusive; also, for a period of years whose date is not preserved.

Mergentheim, Baden, during the year 1841.

Munich, Bavaria, during the years 1781, 1783 to 1785, 1825 to 1837, and 1843 to 1857, all inclusive.

Neustadt, Bavaria, during the first nine months of 1842 (or 1843?).

Peissenberg, Bavaria, during the years 1781, 1783, 1784 and 1785.

Ratisbon (*Regensburg*), Bavaria, during the years 1783, 1784, 1785 and 1788.

Schussenreid, Wurtemberg, during the year 1841.

St. Andex, Bavaria, during the years 1781 to 1785 inclusive.

(Nos. 274 to 304.) **Southern Germany.**—*Continued.*

Stuttgard, Wurtemberg, for a period of one year; date not preserved.

Tegern See, Bavaria, during the years 1781, 1783, 1784 and 1785.

Treves (Trier), Prussia, during the years 1855, 1856 and 1857.

Tutlingen, Wurtemberg, during the year 1841.

Uffenheim, Bavaria, during the year 1843.

Wurtzburg, Bavaria, during the years 1781 to 1785 inclusive; also during a period of five years, whose date is not preserved.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
274. Luxemburg.	Spring	59	15	93	36	172	14	25	9	62	17	131	18	132	7	23	9	...	S. 52° 40′ E.	.06
	Summer	69	19	62	13	108	7	15	3	56	21	165	16	121	9	43	5	...	S. 70 8 W.	.16
	Autumn	57	7	74	14	205	10	64	10	91	19	127	23	82	2	24	7	...	S. 42 20 E.	.20
	Winter	45	15	69	18	118	12	43	27	74	30	139	29	126	12	49	7	...	S. 32 17 W.	.16
	The year[5]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 9 10 W.	.09
275. Treves.	Spring	35	...	122½	...	2½	...	6	...	76	...	18	...	7	...	4	...	...	N. 66 2 E.	.29
	Summer	21	...	96	...	5	...	5	...	76	...	19	...	8	...	10	...	...	N. 87 12 E.	.26
	Autumn	41	...	109	...	5	...	14	...	91	...	4	...	4½	...	1½	...	...	N. 79 33 E.	.31
	Winter	11	...	97	...	6	...	7	...	115	...	19	...	11	...	2	...	...	S. 45 43 E.	.28
	The year[5]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 26 E.	.25

		Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
276. Carlsruhe.[1]	January	7	36	10	10	5	103	7	6	...	S. 47° 58′ W.	.34½	....	...	62
	February	5	42	4	0	5	95	10	7	...	S. 56 07 W.	.35	....	...	56
	March	8	67	7	0	2	67	23	12	...	N. 59 23 W.	.15	....	...	62
	April	29	70	4	2	3	43	16	13	...	N. 0 45 W.	.29	....	...	60
	May	11	58	3	8	6	74	18	8	...	S. 76 31 W.	.14½	....	...	62
	June	13	56	12	3	3	78	10	5	...	S. 74 33 W.	.09	....	...	60
	July	11	45	17	5	12	73	19	4	...	S. 44 26 W.	.16	....	...	62
	August	11	48	10	2	2	93	12	8	...	S. 63 59 W.	.23	....	...	62
	September	10	58	8	13	2	72	10	7	...	S. 51 17 W.	.05½	....	...	60
	October	11	41	8	5	9	98	10	4	...	S. 46 50 W.	.30	....	...	62
	November	7	67	16	3	8	74	4	1	...	S. 48 59 E.	.06	....	...	60
	December	6	71	5	4	8	74	11	7	...	S. 78 57 W.	.06	....	...	62
	Spring	48	195	14	10	11	184	57	33	...	N. 40 09 W.	.14	....	...	184
	Summer	35	149	39	10	17	244	41	17	...	S. 59 03 W.	.15	....	...	184
	Autumn	28	166	32	21	19	244	24	12	...	S. 37 50 W.	.12	....	...	182
	Winter	18	149	19	14	18	272	28	20	...	S. 50 28 W.	.24	....	...	180
	The year	207	1053	120	64	78	1444	216	103	...	S. 73 19 W.	.17	....	...	1095
277. Manheim.[2]	Spring	80	157	89	34	32	115	79	142	...	N. 13 23 W.	.22	....	...	184
	Summer	53	45	45	74	72	163	122	124	...	S. 71 5 W.	.30	....	...	184
	Autumn	35	65	93	81	93	97	55	77	...	S. 12 18 E.	.14½	....	...	121
	Winter	89	126	101	66	46	113	68	103	...	N. 11 33 E.	.40	....	...	180
	The year[5]	...	...	...	...	...	...	...	...	...	N. 72 43 W.	.07	....	...	669
278. Manheim.[3]	The year	1590	1959	1800	1801	1444	2429	1755	2106	...	S. 88 15 W.	.03½	....	...	5052
279. Northern Baden.[4]	Spring	128	352	103	44	43	299	136	175	...	N. 22 17 W.	.18	N. 9° E.	.18	
	Summer	88	194	84	84	89	407	163	141	...	S. 67 35 W.	.23½	S. 57½ W.	.15	
	Autumn	63	231	125	102	112	341	79	89	...	S. 9 26 W.	.12	S. 35 E.	.13	
	Winter	107	275	120	80	64	385	96	123	...	S. 87 1 W.	.07	N. 68½ E.	.03	
	The year	1976	3011	2232	2111	1752	3861	2229	2634	...	S. 89 34 W.	.05	....	...	

[1] Months and seasons for the years 1834 and 1835 only.
[2] Years 1785 and 1855.
[3] Aggregate for 14 years.
[4] Nos. 276 to 278 combined.
[5] Computed from the resultants for the seasons.

(Nos. 279(*a*) to 288.) **Southern Germany.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
279(*a*). Manheim.[1]	January	8	8	3	18	20	20	8	15	...					
	February	8	10	2	12	19	21	12	16	...					
	March	9	8	4	12	16	19	11	21	...					
	April	10	10	5	12	15	16	11	20	...					
	May	11	9	5	11	11	14	12	27	...					
	June	11	7	4	11	16	19	12	20	...					
	July	10	7	3	10	15	18	13	24	...					
	August	9	6	3	13	19	17	13	20	...					
	September	15	8	5	15	16	14	9	18	...					
	October	10	6	4	14	22	17	9	18	...					
	November	9	9	4	19	22	14	7	16	...					
	December	11	8	4	17	18	18	8	16	...					
	Spring	30	27	14	35	42	49	34	68	...	S. 85° 54′ W.	.20	N. 23½° W.	.09	
	Summer	30	20	10	34	50	54	38	64	...	S. 72 42 W.	.26	N. 76 W.	.09	
	Autumn	34	23	13	48	60	45	25	52	...	S. 38 6 W.	.16½	S. 61½ E.	.07	
	Winter	27	26	9	47	57	59	28	47	...	S. 32 5½ W.	.21	S. 33 E.	.10	
	The year	121	96	46	164	209	207	125	231	...	S. 59 19 W.	.18			
280. Mergentheim.	Spring	50	28	85	5	29	31	33	15	...	N. 58 46 E.	.18	....	...	92
	Summer	46	16	39	8	24	44	67	20	...	N. 79 14 W.	.21	....	...	92
	Autumn	15	10	41	14	39	28	105	21	...	S. 68 44 W.	.32	....	...	91
	Winter.	21	31	68	3	17	58	48	12	...	S. 32 7 W.	.04	....	...	90
	The year	132	85	233	30	109	157	271	68	...	S. 89 30 W.	.11	....	...	365
281. Tutlingen.	Spring	43	24	49	7	20	42	57	34	...	N. 53 36 W.	.19	....	...	92
	Summer	38	28	22	3	10	30	89	56	...	N. 50 58 W.	.49	....	...	92
	Autumn	7	12	67	3	3	60	79	42	...	S. 88 10 W.	.28	....	...	91
	Winter	19	31	8	0	1	75	83	53	...	N. 80 29 W.	.55	....	...	90
	The year	107	95	146	13	34	207	308	185	...	N. 72 21 W.	.35	....	...	365
282. Stuttgard.	The year	20	60	99	6	16	101	51	12	...	S. 35 27 E.	.07	....	...	365
283. Schussenreid.	Spring	16	46	0	29	17	71	65	40	...	S. 83 8 W.	.32	....	...	92
	Summer	10	33	1	1	1	92	58	73	...	N. 83 4 W.	.56	....	...	92
	Autumn	19	24	47	0	7	65	87	24	...	S. 89 59 W.	.32	....	...	91
	Winter	8	26	3	0	8	97	59	63	...	S. 87 51 W.	.57	....	...	90
	The year	53	129	51	30	33	331	269	200	...	S. 89 26 W.	.44	....	...	365
284. ssny.	Spring	4	15	65	16	13	58	10	3	...	S. 34 48 E.	.32	....	...	92
	Summer	2	12	19	14	26	73	11	6	...	S. 22 3 W.	.48	....	...	92
	Autumn	0	4	33	21	22	67	25	3	...	S. 16 45 W.	.47	....	...	91
	Winter	13	6	25	25	30	60	8	3	...	S. 4 33 W.	.42	....	...	90
	The year	19	37	162	76	91	268	54	15	...	S. 2 30 W.	.39	....	...	365
285. Wurtemberg.[2]	Spring	113	113	199	57	79	202	165	92	...	S. 85 33 W.	.05½	N. 79 E.	.19½	
	Summer	96	89	81	26	61	239	225	155	...	N. 86 37 W.	.35	N. 59 W.	.12	
	Autumn	41	50	188	38	71	220	296	90	...	S. 66 49 W.	.29	S. 15½ W.	.08	
	Winter	61	94	104	28	56	290	198	131	...	S. 78 45 W.	.32	S. 71 W.	.07	
	The year	331	406	671	155	283	1052	935	480	...	S. 79 20 W.	.22½	....	...	
286. Wurtzburg.[3]	The year	11	9	10	6	9	16	23	16	...	N. 80 39 W.	.26	....	...	1826
287. Wurtzburg.[4]	Spring	27	46	18	17	2	30	76	57	...	N. 49 16 W.	.36	....	...	92
	Summer	5	9	16	11	4	65	95	66	...	N. 89 54 W.	.58	....	...	92
	Autumn	7	14	27	16	10	33	91	62	...	N. 81 41 W.	.43	....	...	91
	Winter	28	42	17	17	11	38	60	49	...	N. 55 56 W.	.29	....	...	90
	The year	315	468	551	505	502	1136	1177	684	...	S. 66 25 W.	.25	....	...	1826
288. Giengen.	Spring	37	32	40	6	32	39	44	42	...	N. 53 28 W.	.16	....	...	92
	Summer	27	15	16	4	20	46	46	72	...	N. 75 16 W.	.48	....	...	92
	Autumn	10	24	28	9	43	88	41	24	...	S. 47 10 W.	.37	....	...	91
	Winter	15	30	28	18	22	82	45	30	...	S. 62 35 W.	.26	....	...	90
	The year	89	99	112	37	117	255	202	168	...	S. 81 8 W.	.27½	....	...	365

[1] This series of observations, extending through 22 years, and including the observations given (277 and 278), was received after the results given above had been compiled and placed on the maps. The observations were taken by Dr. Edward Weber, from 1843 to 1870 inclusive; which 22 of these years were taken is not stated.
[2] Nos. 280 to 284 combined. [3] Five years without date.
[4] Herbipolis. Seasons for the year 1785 only.

(Nos. 289 to 299.) **Southern Germany.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
289. Uffenheim.	Spring	23	7	55	22	33	18	85	19	...	S. 60° 51′ W.	.16	....	...	92
	Summer	37	8	22	21	14	26	97	39	...	N. 82 37 W.	.38	....	...	92
	Autumn	29	7	49	15	19	38	93	23	...	N. 86 1 W.	.28	....	...	91
	Winter	17	2	31	22	44	16	118	16	...	N. 66 31 W.	.39	....	...	90
	The year	106	24	157	82	110	98	393	97	...	S. 81 18 W.	.28	....	...	365
290. Anspach.	Spring	20	34	50	27	25	22	71	37	...	N. 61 40 W.	.08	....	...	92
	Summer	19	23	14	25	15	27	86	58	...	N. 75 59 W.	.37	....	...	92
	Autumn	17	19	43	25	12	51	74	26	...	S. 72 43 W.	.31	....	...	91
	Winter	3	20	11	27	21	16	54	20	...	S. 51 25 W.	.21	....	...	59
	The year	59	96	118	94	78	116	285	141	...	N. 89 59 W.	.12	....	...	334
291. Gunzenhausen.	Spring	5	0	70	8	11	19	62	9	...	S. 18 9 W.	.11			
	Summer	14	3	24	18	17	7	74	27	...	N. 89 29 W.	.32			
	Autumn	8	0	34	32	14	14	69	11	...	S. 44 20 W.	.23½			
	Winter	3	0	53	15	19	15	74	1	...	S. 30 44 W.	.23½			
	The year	30	3	181	73	61	55	279	48	...	S. 53 53 W.	.20			
292. Giengen on the Brenz.	Spring	35	32	40	6	32	40	45	46	0	N. 56 39 W.	.17	....	...	92
	Summer	28	15	16	4	19	48	71	71	4	N. 75 16 W.	.47	....	...	92
	Autumn	11	24	28	5	42	88	46	22	3	S. 50 4 W.	.37	....	...	91
	Winter	14	30	26	18	22	83	44	28	2	S. 58 30 W.	.27	....	...	90
	The year	88	101	110	33	115	259	203	167	9	S. 81 50 W.	.28	....	...	365
293. Neustadt.	Spring	10	17	69	22	25	88	89	6	...	S. 29 46 W.	.17			
	Summer	19	23	18	12	25	25	110	34	...	N. 85 44 W.	.41			
	Autumn	6	5	36	0	5	0	27	11	...	N. 21 9 E.	.15			
	Winter	1	5	25	24	19	28	66	9	...	S. 45 8 W.	.36			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 71 45 W.	.18			

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
294. Bamberg.	Spring	27	8	34	7	19	3	13	5	16	4	56	5	22	7	20	25	0	N. 54° 30′ W.	.16		
	Summer	31	9	18	1	13	9	10	18	16	1	38	9	35	11	25	22	4	N. 69 30 W.	.22		
	Autumn	42	5	31	9	15	3	19	25	15	2	22	5	25	8	25	15	4	N. 6 21 W.	.13		
	Winter	29	6	28	7	8	9	22	16	29	6	36	4	23	7	26	10	0	S. 64 16 W.	.07		
	The year	129	28	111	24	55	24	64	64	76	13	152	23	105	33	96	72	8	N. 56 1 W.	.12		
295. St. Andex.	The year	206	4	277	9	344	4	212	1	218	18	573	3	1499	23	709	18	42	N. 85 21 W.	.39		
296. Western Bavaria.[1]	Spring	184	8	202	7	361	3	121	5	176	4	312	5	494	7	236	25	0	N. 86 34 W.	.14	N. 73½° E.	.11
	Summer	180	9	114	1	139	9	105	18	130	1	282	9	614	11	392	26	4	N. 79 42 W.	.40	N. 59 W.	.17½
	Autumn	130	5	124	9	260	3	121	25	160	2	334	5	466	8	204	15	7	S. 73 18 W.	.23	S. 25 E.	.05
	Winter	110	6	157	7	199	9	163	16	187	6	314	4	484	7	179	10	2	S. 65 35 W.	.23½	S. 20 E.	.08
	The year	1402	28	1404	24	1932	24	1254	64	1578	13	3012	23	4063	33	2261	76	13	S. 81 50 W.	.23½		
297. S. & S. W. Bavaria.[2]	Spring	382	19	1297	31	1031	14	461	20	301	10	1745	6	1760	16	874	30	363	N. 86 21 W.	.16	N. 11 E.	.06
	Summer	421	12	1062	12	734	35	370	15	283	22	2095	24	1701	47	1015	22	435	S. 86 21 W.	.26	N. 71 W.	.09
	Autumn	289	15	1094	12	1120	65	586	21	377	25	1742	25	1646	33	666	11	626	S. 62 50 W.	.14	S. 67 E.	.05
	Winter	175	10	1039	23	1024	22	662	31	377	16	1817	4	1787	19	510	26	618	S. 53 56 W.	.18	S. 22 E.	.06½
	The year	2181	128	5252	251	4816	203	2930	265	2287	131	8733	115	9341	199	4580	348	2157	S. 81 0 W.	.18½		
298. Ingolstadt.	The year	31	0	64	185	0	78	0	51	0	246	0	297	0	112	0	26	29	S. 40 30 W.	.24		
299. Peissenberg.[3]	Spring	13	11	29	24	32	0	14	1	10	6	26	3	54	5	19	10	19	N. 17 51 W.	.12		
	Summer	7	7	19	11	11	4	7	3	17	14	32	20	62	23	20	12	7	S. 87 33 W.	.37		
	Autumn	7	9	14	10	10	11	19	17	19	25	33	15	35	22	17	7	3	S. 48 5 W.	.26½		
	Winter	7	9	28	18	20	5	32	9	16	10	26	1	50	7	13	5	14	S. 0 24 W.	.07		
	The year	151	76	373	201	477	45	237	72	270	77	647	87	1059	107	272	59	106	S. 80 19 W.	.15		

[1] Nos. 286 to 294 combined.

[2] Nos. 295 and 299 to 301 combined.

[3] Months and seasons for the year 1785 only.

[4] Computed from the resultants for the season by plotting.

(Nos. 300 to 304.) **Southern Germany.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
300. Munich.	Spring	356	...	1253	...	993	...	424	...	268	...	1715	...	1701	...	751	...	344	S. 89° 39′ W.	.10			
	Summer	400	...	1036	...	707	...	374	...	254	...	2050	...	1687	...	957	...	428	S. 83 0 W.	.27			
	Autumn	278	...	1070	...	1085	...	530	...	350	...	1702	...	1556	...	621	...	623	S. 65 10 W.	.14			
	Winter	160	...	1004	...	1000	...	588	...	333	...	1767	...	1701	...	453	...	604	S. 54 47 W.	.18½			
	The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 57 W.	.17			
301. Tegern See.[1]	Spring	13	8	15	7	6	14	23	19	23	4	4	3	5	11	104	20	...	N. 34 31 W.	.26			
	Summer	14	5	7	1	16	31	29	12	12	8	13	4	52	24	38	10	...	S. 84 18 W.	.16			
	Autumn	4	6	10	2	25	54	37	4	8	0	7	10	55	11	28	4	...	S. 30 25 E.	.10			
	Winter	8	1	7	5	4	17	42	22	28	6	24	3	36	12	44	21	...	S. 47 22 W.	.20			
	The year	630	48	239	41	210	153	605	192	594	36	279	25	238	69	827	271	...	N. 33 29 W.	.06			
302. Ratisbon[1] (or Regensb.)	Spring	37	...	38	...	34	...	45	...	3	...	10	...	24	...	84	...	...	N. 1 34 E.	.29½			
	Summer	24	...	5	...	13	...	31	...	5	...	12	...	62	...	124	...	...	N. 56 19 W.	.52			
	Autumn	19	...	15	...	15	...	64	...	11	...	27	...	76	...	45	...	...	S. 76 3 W.	.21			
	Winter	34	...	59	...	32	...	65	...	1	...	10	...	25	...	44	...	...	N. 46 57 E.	.28½			
	The year	408	...	559	...	493	...	663	...	118	...	397	...	737	...	896	...	...	N. 27 20 W.	.15			
303. Burglengenfeld.	Spring	16	...	0	...	131	...	6	...	13	...	3	...	98	...	9	...	...	N. 84 04 E.	.10	....	...	92
	Summer	22	...	0	...	86	...	8	...	23	...	4	...	117	...	16	...	...	N. 87 21 W.	.15	....	...	92
	Autumn	26	...	0	...	110	...	11	...	6	...	3	...	102	...	14	...	...	N. 10 39 E.	.07	....	...	91
	Winter	7	...	1	...	78	...	32	...	24	...	5	...	105	...	8	...	...	S. 19 15 W.	.15	....	...	90
	The year	71	...	1	...	405	...	57	...	66	...	15	...	422	...	47	...	...	S. 58 53 W.	.02	....	...	365
304. Central Bavaria.[2]	Spring	53	...	38	...	165	...	51	...	16	...	13	...	122	...	93	...	...	N. 20 10 E.	.16	N. 62° E.	.13½	
	Summer	46	...	5	...	99	...	39	...	28	...	16	...	179	...	140	...	...	N. 62 51 W.	.32½	N. 75 W.	.23½	
	Autumn	45	...	15	...	125	...	75	...	17	...	30	...	178	...	59	...	...	N. 83 22 W.	.10	S. 25½ W.	.08½	
	Winter	41	...	60	...	110	...	97	...	25	...	15	...	130	...	52	...	...	N. 69 52 E.	.09	S. 69½ E.	.15½	
	The year	510	0	624	185	898	78	720	51	184	246	412	297	1159	112	943	26	29	N. 54 7 W.	.09			

[1] Months and seasons for the year 1785 only. [2] Nos. 298, 302 and 303 combined. [3] Computed from the resultants for the seasons.

(Nos. 305 to 310.) **Northern Italy.**

Observed at the following places, viz. :—

Milan, during a period of 89 years, from 1763 to 1851 inclusive.

Padua, during the years 1781, 1783, 1784 and 1785.

Turin, during the month of August, 1857.

Udine, during the years 1803 to 1842 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
305. Turin.	August	0	13	3	4	0	7	0	3	...	N. 72° 48′ E.?	.35	40
306. Milan.	Spring	5388	...	9715	...	4297	...	6578	...	...	N. 70 49 E.	.13	7974
	Summer	4991	...	9706	...	5014	...	6433	...	...	S. 89 36 E.	.12½	8004
	Autumn	5544	...	9271	...	3962	...	6856	...	...	N. 56 47 E.	.11	7795
	Winter	5517	...	6811	...	3672	...	10129	...	...	N. 60 55 W.	.14½	7852
	The year	21440	...	35503	...	16945	...	29996	...	...	N. 71 1 E.	.05½	31625
307 & 308. Padua.	The year	1180	588	577	325	355	389	616	569	239	N. 4 53 W.	.24	1461
309. Udine.	Spring	2276	...	3633	...	4043	...	2031	...	...	S. 14 12 E.	.20	3680
	Summer	2798	...	3193	...	3657	...	2350	...	...	S. 44 28 E.	.10	3680
	Autumn	3684	...	4545	...	2704	...	1167	...	...	N. 67 36 E.	.21	3640
	Winter	4597	...	5473	...	1187	...	711	...	...	N. 54 24 E.	.49	3610
	The year	13355	...	16844	...	11591	...	6259	...	...	N. 79 35 E.	.20	14610
310. Venetia.[1]	The year	...	...	...	...	...	...	...	...	...	N. 33 10 E.	.16½	

[1] Computed from the resultants at Padua and Udine by plotting.

(Nos. 311 to 340.) **Austrian Empire.**

Observed at the following places, viz.:—

Adelsberg, Illyria, during the years 1850 and 1851.

Althofen, Hungary, during the years 1850 and 1851.

Botzen, Tyrol, during the year 1851.

Brunn, Moravia, during the years 1848 to 1851 inclusive.

Buda, Hungary, during the years 1782 to 1785, and by Meyer, 1842 to 1844, both inclusive.

Czaslau, Bohemia, during the year 1848.

Debreczin, Hungary, during the years 1854 to 1858 inclusive.

Deutschbrod, Bohemia, during the years 1848, 1849 and 1850.

Funfkirchen, Hungary, during the years 1819 to 1832 inclusive.

Graetz, Styria, during the years 1837 to 1845 inclusive.

Hermannstadt, Transylvania, during the year 1851.

Hohenpeissenberg,[1] Bavaria, during the years 1846 to 1850 inclusive

Ittendorf,[1] Bavaria, from December, 1854, to November, 1857, inclusive.

Klagenfurth, Illyria, during the years 1848 to 1851 inclusive, and ten months of 1855.

Kremsmunster, Austria, during the years 1802 to 1851, and 1855 to 1857 both inclusive.

Lemberg, Galicia, during the years 1854 to 1858 inclusive.

Obir, Illyria, during the years 1866 to 1868 inclusive.

Olmutz, Moravia, during the year 1850, except October and November.

Ofen. (See *Buda*.)

Pilsen, Bohemia, during an aggregate period of 29 months in the years 1848, 1849 and 1850.

Sagritz, Austria, from June, 1848, to December, 1850, inclusive.

St. Paul, Illyria, during an aggregate period of 18 months in the years 1848 and 1850.

St. Peter, Austria, from May, 1850, to December, 1851, inclusive.

Salzburg, during the years 1847 to 1852 inclusive.

San Lorenzo, Illyria, during the year 1851.

Selau, Bohemia, during the years 1848 and 1849.

Stanislau, Galicia, during the year 1851.

Steubenbach, Bohemia, from December, 1848, to December, 1850, inclusive.

Trieste, Illyria, during the years 1841 to 1850 inclusive.

Vienna, Austria, from January, 1798, to November, 1851, and from December, 1854, to May, 1856, both inclusive.

Wartburg, Hungary, during the years 1823 to 1827.

Winterberg, Bohemia, from April, 1848, to December, 1850, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
311. Ittendorf.[1]	Spring	50	44	29	24	23	41	35	25	...	N. 8° 45′ W.	.11	N. 67½° E.	.10	
	Summer	36	30	24	21	24	54	38	43	...	N. 77 11 W.	.18	S. 64½ W.	.07	
	Autumn	25	54	32	25	14	48	35	28	9	N. 2 54 W.	.06	S. 85 E.	.11	
	Winter	40	28	20	18	21	44	63	35	...	N. 73 26 W.	.26	N. 89 W.	.14	
	The year	151	156	105	88	82	187	171	131	9	N. 56 47 W.	.13			
312. Hohenpeissenberg.[1]	Spring	65	265	100	119	100	306	272	150	3	S. 79 18 W.	.16½	N. 66 E.	.07	
	Summer	81	290	101	87	74	274	315	157	1	N. 74 57 W.	.19	N. 21 E.	.11	
	Autumn	49	223	87	121	81	332	338	134	...	S. 73 30 W.	.26	S. 58 W.	.03	
	Winter	40	185	86	105	85	436	325	91	...	S. 60 15 W.	.35	S. 34½ W.	.14	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 75 45 W.	.23			
313. Botzen.	Spring	6	10	3	25	69	25	11	5	19	S. 2 55 W.	.51			
	Summer	8	11	10	9	7	34	49	15	19	S. 79 31 W.	.37½			
	Autumn	5	6	15	22	54	13	27	10	33	S. 7 45 W.	.34			
	Winter	17	5	5	21	20	29	18	11	27	S. 40 14 W.	.23			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 28 28 W.	.31			

[1] Hohenpeissenberg and Ittendorf should have been included in the chapter on Southern Germany, Nos. 274 to 304.

[2] Computed from the resultants for the seasons.

(Nos. 314 to 318.) **Austrian Empire.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
314. Tyrol.[1]	Spring	121	319	132	168	192	372	318	180	22	S. 66° 41′ W.	.14	N. 85° E.	.06½	828
	Summer	125	331	135	117	105	362	402	215	20	N. 79 21 W.	.20	N. 0½ E.	.09½	828
	Autumn	79	283	134	168	149	393	400	172	42	S. 67 18 W.	.20½	S. 20 E.	.02	819
	Winter	97	218	111	144	146	509	406	137	27	S. 62 21 W.	.31	S. 47½ W.	.11	812
	The year	422	1151	512	597	592	1636	1526	704	111	S. 73 2 W.	.21	....	...	3287
315. Sagritz. Surface winds.	Spring	29	28	1	29	49	1	1	4	5	S. 63 11 E.	.28			
	Summer	25	17	7	21	90	11	28	18	5	S. 13 6 W.	.29			
	Autumn	31	27	2	24	61	11	20	16	3	S. 2 25 W.	.12½			
	Winter	26	28	3	1	1	0	5	13	3	N. 9 55 E.	.67½			
	The year	...	...	...	...	...	...	...	...	...	N. 67 32 E.	.08			
Motion of clouds.	Spring	44	4	9	3	17	19	41	19	3	N. 62 49 W.	.38			
	Summer	35	2	0	1	9	22	48	30	0	N. 68 37 W.	.60½			
	Autumn	44	1	4	1	10	33	45	23	0	N. 71 13 W.	.52			
	Winter	36	2	5	0	4	10	14	27	0	N. 36 37 W.	.58			
	The year	...	...	...	...	...	...	...	...	...	N. 59 28 W.	.50½			
Aggregate.	Spring	73	32	10	32	66	20	42	23	8	N. 62 0 W.	.06			
	Summer	60	19	7	22	99	33	76	49	5	S. 72 45 W.	.28			
	Autumn	75	28	6	25	71	44	65	39	6	N. 88 9 W.	.22½			
	Winter	62	30	8	1	5	10	19	40	4	N. 13 55 W.	.57			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 53 0 W.	.21	....	...	944
316. St. Peter. Surface wind.	Spring	4	32	1	19	7	15	2	22	9	N. 38 37 E.	.13			
	Summer	17	63	10	27	5	9	2	17	39	N. 51 0 E.	.36			
	Autumn	34	50	6	56	1	7	0	8	21	N. 67 17 E.	.41½			
	Winter	19	23	2	6	2	10	7	40	11	N. 25 10 E.	.53			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 45 4 E.	.34			
Motion of clouds.	Spring	14	3	9	42	35	34	44	13	...	S. 29 52 W.	.38			
	Summer	28	8	2	11	49	36	89	29	...	S. 76 47 W.	.49			
	Autumn	47	9	9	31	75	19	43	12	...	S. 29 40 W.	.23			
	Winter	7	0	22	7	9	26	27	15	...	S. 63 7 W.	.29			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 53 24 W.	.32			
Aggregate.	Spring	18	35	10	61	42	50	46	35	10	S. 28 1 W.	.19½			
	Summer	45	71	12	38	54	45	91	46	39	N. 77 13 W.	.15½			
	Autumn	81	59	15	87	76	26	43	20	22	N. 65 58 E.	.11			
	Winter	26	23	24	13	11	36	34	55	12	N. 54 1 W.	.26			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 84 56 W.	.09	....	...	610
317. Hoch Obir.	January	3	1	1	5	1	7	8	5						
	February	1	0	1	0	1	8	8	9						
	March	4	4	1	1	2	11	4	4						
	April	2	3	2	1	3	9	5	5						
	May	4	3	1	2	2	9	6	4						
	June	3	2	1	2	3	10	5	4						
	July	2	1	0	2	3	11	6	6						
	August	4	0	1	2	4	12	7	1						
	September	2	1	2	1	3	13	6	2						
	October	6	4	2	3	2	6	5	3						
	November	5	2	0	1	4	7	4	7						
	December	11	0	0	0	3	7	5	5						
	Spring	10	10	4	4	7	29	15	13	...	S. 82 28 W.	.34			
	Summer	9	3	2	6	10	33	18	11	...	S. 65 23 W.	.22			
	Autumn	13	7	4	5	9	26	15	12	...	S. 81 19 W.	.33			
	Winter	15	1	2	5	5	22	21	19	...	N. 83 25 W.	.49			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 24 W.	.40	....	...	1096
318. Klagenfurth. Surface wind.	Spring	18	33	36	34	17	88	117	70	12	S. 85 7 W.	.34½			
	Summer	13	32	32	34	10	73	89	37	21	S. 74 50 W.	.27			
	Autumn	11	21	40	26	10	61	103	39	9	S. 79 48 W.	.42			
	Winter	18	17	25	29	14	78	105	50	5	S. 81 30 W.	.41			
	The year	...	...	...	...	...	...	...	...	...	S. 80 14 W.	.33½			
Motion of clouds.	Spring	35	1	7	5	12	52	55	24	1	N. 89 47 W.	.51			
	Summer	19	5	16	4	12	41	30	38	0	N. 84 58 W.	.38½			
	Autumn	39	2	7	9	39	39	33	17	1	S. 70 28 W.	.33			
	Winter	28	1	2	4	11	13	29	8	5	N. 73 31 W.	.39½			
	The year	...	...	...	...	...	...	...	...	...	N. 88 37 W.	.39½			
Aggregate.	Spring	53	34	43	39	29	140	172	94	13	S. 87 9 W.	.39			
	Summer	32	37	48	38	22	114	119	75	21	S. 83 0 W.	.30			
	Autumn	50	23	47	35	49	100	136	56	10	S. 76 18 W.	.30			
	Winter	46	18	27	33	25	91	134	58	5	S. 85 48 W.	.40½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 83 26 W.	.35½	....	...	1766

[1] Nos. 311 to 313 combined. [2] Computed from the resultants for the seasons.

(Nos. 319 to 325.) **Austrian Empire.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
319. St. Paul.	Spring	4	11	16	58	25	36	13	7	10	S. 15° 58′ E.	.43			
	Summer	2	10	21	45	40	35	14	5	7	S. 11 51 E.	.48			
	Autumn	1	1	4	18	12	14	4	0	4	S. 6 8 E.	.57			
	Winter	0	6	16	18	15	17	2	4	8	S. 23 19 E.	.43			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 13 39 E.	.48	....	...	548
320. Northern Illyria.[1]	Spring	158	122	83	194	169	275	288	172	41	S. 65 39 W.	.21	S. 17½° E.	.05	
	Summer	148	140	90	149	225	260	318	186	72	S. 68 7 W.	.23	S. 6 W.	.05	
	Autumn	220	118	76	170	217	210	263	127	42	S. 67 37 W.	.16½	S. 62½ E.	.06	
	Winter	149	78	77	70	61	176	210	176	29	N. 71 17 W.	.28½	N. 26 W.	.14	
	The year[4]	...	...	...	...	...	...	...	...	...	S. 79 53 W.	.21	....	...	4964
321. Trieste.	Spring	478	65	1459	62	536	83	618	19	51	S. 83 17 E.	.25½			
	Summer	409	60	1334	51	534	67	815	18	85	S. 74 5 E.	.16½			
	Autumn	432	69	1631	87	614	45	425	13	51	S. 80 20 E.	.38			
	Winter	604	133	1894	22	337	34	255	7	78	N. 79 15 E.	.52			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 88 7 E.	.33			
322. Adelsberg. Surface wind.	Spring	0	57	23	5	4	33	25	7	35	N. 43 19 E.	.10½			
	Summer	0	52	37	5	3	16	12	8	52	N. 67 9 E.	.34			
	Autumn	1	54	27	11	6	17	6	9	53	N. 67 53 E.	.28½			
	Winter	3	69	49	12	1	24	5	5	13	N. 70 17 E.	.47½			
	The year	4	232	136	33	14	90	48	29	153	N. 65 24 E.	.28½			
Motion of clouds.	Spring	3	38	80	2	11	40	75	3	9	S. 18 18 E.	.03½			
	Summer	10	41	87	4	11	33	62	4	17	N. 81 21 E.	.11			
	Autumn	4	39	99	5	24	38	37	8	16	S. 74 11 E.	.23			
	Winter	2	48	111	2	12	15	27	9	4	N. 79 53 E.	.45			
	The year	19	166	377	13	58	126	201	24	46	S. 89 9 E.	.19			
Aggregate.	Spring	3	95	103	7	15	73	100	10	44	N. 70 53 E.	.04			
	Summer	10	93	124	9	14	49	74	12	69	N. 69 42 E.	.18½			
	Autumn	5	93	126	16	30	55	43	17	69	N. 88 39 E.	.24			
	Winter	5	117	160	14	13	39	32	14	17	N. 75 34 E.	.46			
	The year	23	398	513	46	72	216	249	53	199	N. 77 36 E.	.23			
322½. San Lorenzo.	Spring	3	0	0	2	1	46	23	16	1	S. 72 30 W.	.74½			
	Summer	0	1	3	18	7	40	4	18	0	S. 39 35 W.	.49½			
	Autumn	0	1	8	22	1	41	9	6	3	S. 23 51 W.	.49			
	Winter	0	2	3	4	2	35	19	14	9	S. 68 31 W.	.56½			
	The year	3	4	14	46	11	162	55	54	13	S. 54 18 W.	.54			
323. Southern Illyria.[2]	Spring	484	160	1562	71	552	202	741	45	96	S. 81 51 E.	.21	S. 79 W.	.09	
	Summer	419	154	1461	78	555	156	893	48	154	S. 74 54 E.	.15½	S. 78½ W.	.15	
	Autumn	437	163	1765	125	645	141	477	36	123	S. 79 25 E.	.35½	S. 45 E.	.07½	
	Winter	609	252	2057	40	352	108	306	35	104	N. 79 10 E.	.49	N. 61 E.	.21	
	The year	1949	729	6845	314	2104	607	2417	164	477	S. 87 50 E.	.29½	....	...	4747
324. Salzburg. Surface wind.	Spring	275	60	439	51	408	85	439	52	65	S. 85 20 W.	.08			
	Summer	311	91	445	47	431	70	361	30	86	S. 43 25 E.	.08½			
	Autumn	309	56	419	88	443	62	414	32	37	S. 12 50 E.	.10			
	Winter	288	34	408	99	445	61	427	59	37	S. 2 45 W.	.11			
	The year	1183	241	1711	285	1727	278	1641	173	225	S. 10 42 E.	.09	....	...	2192
Motion of clouds.[3]	Spring	1	1	18	27	7	20	224	17	8	S. 82 58 W.	.66			
	Summer	0	0	9	7	5	4	247	3	8	S. 87 26 W.	.84			
	Autumn	3	0	6	10	5	2	121	2	2	S. 84 51 W.	.67			
	Winter	0	0	5	3	1	0	101	2	0	S. 88 58 W.	.85			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 86 18 W.	.75½			
Aggregate.	Spring	276	61	457	78	415	105	663	69	73	S. 52 35 W.	.13			
	Summer	311	91	454	54	436	74	608	33	94	S. 42 29 W.	.08			
	Autumn	312	56	425	98	448	64	535	34	39	S. 20 40 W.	.10			
	Winter	288	34	413	102	446	61	528	61	37	S. 62 59 W.	.12			
	The year	1187	242	1749	332	1745	304	2334	197	243	S. 36 16 W.	.10			
325. Kremsmunster. Surface wind.	Spring	2612	21	4684	33	647	127	7250	53	45	N. 54 9 W.	.21			
	Summer	2216	25	3238	16	537	108	9274	44	35	N. 74 59 W.	.41			
	Autumn	2193	12	4888	20	484	64	7643	55	11	N. 58 56 W.	.21			
	Winter	1973	22	4677	6	564	102	8023	22	50	N. 68 14 W.	.24			
	The year	8994	80	17487	75	2232	401	32190	174	141	N. 66 15 W.	.26½	....	...	19358
Motion of clouds.[3]	Spring	22	5	18	17	51	62	202	41	13	S. 77 59 W.	.57	....	...	368
	Summer	16	7	14	4	21	74	229	43	13	S. 85 7 W.	.38	....	...	368
	Autumn	18	3	36	8	27	58	203	40	12	S. 85 18 W.	.55	....	...	364
	Winter	8	10	45	3	4	38	172	25	2	S. 89 55 W.	.53	....	...	361
	The year														
Aggregate.	Spring	2634	26	4702	50	698	189	7452	94	58	N. 57 24 W.	.22			
	Summer	2232	32	3252	20	558	182	9503	87	48	N. 75 51 W.	.42			
	Autumn	2211	15	4924	28	511	122	7846	95	23	N. 61 14 W.	.22			
	Winter	1981	32	4722	9	568	140	8195	47	52	N. 69 8 W.	.24			
	The year	9058	105	17600	107	2335	633	32996	323	181	N. 67 47 W.	27			

[1] Nos. 315 to 319 combined.
[2] Nos. 321 to 322½ combined.
[3] For the years only from 1848 to 1851 combined.
[4] Computed from the resultants for the seasons.

(Nos. 326 to 337.) **Austrian Empire.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences Direction.	Force.	Number of days.
326.	Spring	...	...	...	...	...	...	...	...	...	N. 82° 0′ W.	.14½	N. 53° E.	.01½	
Nos. 324	Summer	...	...	...	...	...	...	...	...	...	N. 84 0 W.	.23	N. 81 W.	.08	
and 325	Autumn	...	...	...	...	...	...	...	...	...	N. 87 0 W.	.11	S. 81 E.	.04	
combined.[1]	Winter	...	...	...	...	...	...	...	...	...	N. 85 0 W.	.16½	S. 25 W.	.00½	
	The year	...	...	...	...	...	...	...	...	...	N. 85 30 W.	.15½	....	...	59 y's
327.	Spring	11	44	27	45	7	49	29	53	13	N. 61 19 W.	.05			
Pilsen.	Summer	9	39	7	26	6	50	33	36	9	N. 86 48 W.	.19			
	Autumn	3	14	2	17	4	40	14	24	2	S. 67 47 W.	.32			
	Winter	0	70	9	19	2	91	29	41	9	S. 88 32 W.	.19			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 80 43 W.	.18			
328.	Spring	6	25	17	14	2	56	58	47	12	N. 86 25 W.	.37			
Steubenbach.	Summer	3	12	20	8	11	82	85	29	26	S. 71 45 W.	.49			
	Autumn	4	22	18	10	2	78	76	41	18	S. 82 32 W.	.45			
	Winter	11	7	15	2	0	41	84	31	6	N. 86 15 W.	.58			
	The year[4]	...	...	...	...	...	..	...	...	...	S. 85 19 W.	.46½			
329.	Spring	4	10	3	20	21	67	33	68	16	S. 77 22 W.	.44			
Winterberg.	Summer	4	3	0	4	11	89	44	76	15	S. 83 48 W.	.64			
	Autumn	6	8	5	11	5	96	46	84	11	S. 86 27 W.	.57			
	Winter	0	1	8	21	6	68	36	62	8	S. 76 51 W.	.51			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 81 33 W.	.54			
330.	Spring	21	79	47	79	30	172	120	168	41	S. 86 39 W.	.26½	N. 76½ E.	.13	
South-western	Summer	16	54	27	38	28	221	162	141	50	S. 80 2 W.	.45	S. 57 W.	.06	
Bohemia.[2]	Autumn	13	44	25	38	11	214	136	149	31	S. 82 42 W.	.47	S. 79 W.	.07	
	Winter	11	78	32	42	8	200	149	134	23	S. 86 7 W.	.40	N. 18½ W.	.01½	
	The year[4]	...	...	...	...	...	...	...	...	...	S. 83 26 W.	.39½	....	...	7 y's
331.	Spring	27	29	18	75	8	8	11	88	13	N. 16 23 E.	.16			
Deutschbrod.	Summer	25	25	15	35	6	13	20	125	13	N. 36 7 W.	.41			
	Autumn	13	23	22	61	5	7	12	119	12	N. 18 4 W.	.23			
	Winter	16	31	25	54	3	13	9	113	7	N. 11 43 W.	.25½			
	The year[1]	...	...	...	...	...	...	...	...	...	N. 18 30 W.	.25			
332.	Spring	4	4	17	53	3	5	47	32	4	S. 47 26 W.	.13			
Selau.	Summer	2	3	19	16	6	18	78	14	6	S. 76 47 W.	.43			
	Autumn	6	2	24	42	2	6	41	25	3	S. 35 45 W.	.09			
	Winter	6	2	20	29	3	6	41	28	5	S. 88 40 W.	.17			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 70 21 W.	.19½			
333.	Spring	3	3	0	11	17	25	11	20	1	S. 54 50 W.	.44			
Czaslau.	Summer	2	2	0	5	7	36	22	16	0	S. 68 27 W.	.64			
	Autumn	1	6	0	12	14	26	13	11	0	S. 43 30 W.	.46			
	Winter	5	3	0	14	14	32	10	2	1	S. 30 6 W.	.54			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 50 8 W.	.50½			
334.	Spring	34	36	35	139	28	38	69	140	18	N. 81 40 W.	.07	S. 63½ E.	.10	
South-eastern	Summer	29	30	34	56	19	67	120	155	19	N. 73 32 W.	.36	N. 76½ W.	.19	
Bohemia.[3]	Autumn	20	31	46	115	21	39	66	165	15	N. 64 49 W.	.13	S. 89½ E.	.04½	
	Winter	27	36	45	97	20	51	60	143	13	N. 63 33 W.	.13	N. 85½ E.	04½	
	The year	110	133	160	407	88	195	315	603	65	N. 70 47 W.	.17	....	...	6 y's
335.	Spring	563	...	617	...	981	...	539	...	...	S. 10 34 E.	.16	N. 89 E.	.01½	
Graetz.	Summer	634	...	510	...	943	...	613	...	...	S. 18 26 W.	.12	N. 54 W.	.06	
	Autumn	589	...	597	...	1008	...	503	...	...	S. 12 39 E.	.16	S. 84 E.	.02	
	Winter	504	...	638	...	1007	...	549	...	...	S. 10 2 E.	.19	S. 29 E.	.04	
	The year	2290	...	2362	...	3939	...	2204	...	...	S. 7 20 E.	.15½	....	...	9 y's
336.	Spring	4610	35	2356	183	3516	102	5369	362	25	N. 69 46 W.	.21	N. 89 E.	.05	
Vienna.	Summer	4441	17	1629	90	2520	77	7152	447	36	N. 69 53 W.	.38	N. 61 W.	.12	
	Autumn	3732	19	2398	173	3883	88	5777	318	22	N. 65 9 W.	.24	N. 39 E.	.05	
	Winter	3468	42	2457	188	3967	94	5896	360	16	S. 84 41 W.	.23	S. 13 E.	.09	
	The year	16251	112	8840	634	13886	361	24194	1487	99	N. 80 10 W.	.25	....	...	56 y's
337.	January	15	10	3	11	21	73	17	67	...	S. 78 24 W.	.45			
Vienna	February	21	63	1	66	11	11	0	22	...	N. 73 47 E.	.39			
and	March	9	15	14	31	25	59	5	58	...	S. 50 50 W.	.24			
Schönthal.	April	15	46	1	30	20	27	9	61	...	N. 20 35 W.	.17			
	May	34	51	4	25	19	28	12	43	...	N. 5 18 W.	.20			
	June	22	13	2	23	10	59	4	76	...	N. 83 7 W.	.35			
	July	17	9	4	5	14	78	6	83	...	N. 86 48 W.	.50			
	August	10	18	7	31	20	62	1	67	...	S. 65 48 W.	.27			
	September	15	31	7	29	28	50	0	50	...	S. 51 7 W.	.13			
	October	1	13	0	40	34	77	5	46	...	S. 37 40 W.	.46			
	November	2	19	8	39	25	76	10	41	...	S. 34 48 W.	.35			
	December	9	13	7	45	19	65	7	52	...	S. 42 4 W.	.30			

[1] Resultants combined by plotting.
[2] Nos. 327 to 329 combined.
[3] Nos. 331 to 333 combined.
[4] Computed from the resultants for the seasons.

(Nos. 338 to 345.) **Austrian Empire.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
338. Brunn. Surface wind.	Spring	35	35	10	77	19	30	30	118	17	N. 56° 52′ W.	.16½			
	Summer	29	38	8	43	22	47	16	155	12	N. 49 32 W.	.33			
	Autumn	31	27	4	71	19	47	40	112	14	N. 71 16 W.	.23			
	Winter	21	22	12	83	20	35	29	130	9	N. 67 9 W.	.18			
	The year	116	122	34	274	80	159	115	515	52	N. 57 1 W.	.22½			
338. Brunn. Motion of clouds.	Spring	15	3	8	11	21	5	55	50	0	N. 75 8 W.	.47			
	Summer	12	6	10	17	3	7	53	62	0	N. 62 2 W.	.50½			
	Autumn	10	2	8	28	27	14	25	28	0	S. 45 0 W.	.25			
	Winter	21	3	6	8	12	4	20	40	0	N. 50 22 W.	.43			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 72 15 W.	.37			
338. Brunn. Aggregate.	Spring	50	38	18	88	40	35	85	168	17	N. 60 30 W.	.26			
	Summer	41	44	18	60	25	54	69	217	12	N. 53 30 W.	.37½			
	Autumn	41	29	12	99	46	61	65	140	14	N. 89 17 W.	.21			
	Winter	42	25	18	91	32	39	49	170	9	N. 59 57 W.	.23½			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 63 30 W.	.26			
339. Olmutz. Surface wind.	Spring	6	14	7	10	10	11	3	25	7	N. 27 12 W.	.10½			
	Summer	5	14	6	3	12	12	9	22	9	N. 62 25 W.	.18½			
	Autumn	4	3	0	1	0	2	0	14	0	N. 31 25 W.	.68			
	Winter	2	6	6	12	2	9	6	14	2	S. 78 40 W.	.06			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 39 58 W.	.24			
339. Olmutz. Motion of clouds.	Spring	33	18	11	3	10	5	34	34	1	N. 33 26 W.	.43½			
	Summer	11	12	19	2	11	13	64	11	9	N. 83 48 W.	.34			
	Autumn	7	4	8	0	0	4	13	2	2	N. 37 5 W.	.26½			
	Winter	24	12	2	0	4	0	17	20	0	N. 25 51 W.	.60			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 41 6 W.	.38			
339. Olmutz. Aggregate.	Spring	39	32	18	13	20	16	37	59	8	N. 32 37 W.	.31	....	...	92
	Summer	16	26	25	5	23	25	73	33	18	N. 78 37 W.	.28	....	...	92
	Autumn	11	7	8	1	0	6	13	16	2	N. 33 44 W.	.44	....	...	30
	Winter	26	18	8	12	6	9	23	34	2	N. 30 0 W.	.35	....	...	59
	The year[2]	...	...	...	...	...	...	...	...	...	N. 41 16 W.	.32	....	...	273
340. Moravia.[1]	Spring	89	70	36	101	60	51	122	227	25	N. 50 52 W.	.27	N. 29° E.	.04½	
	Summer	57	70	43	65	48	79	142	250	30	N. 60 31 W.	.34½	N. 64½ W.	.08	
	Autumn	52	36	20	100	46	67	78	156	16	N. 78 48 W.	.21½	S. 10½ E.	.09½	
	Winter	68	43	26	103	38	48	72	204	11	N. 51 28 W.	.25	N. 56 E.	.04	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 59 31 W.	.26½	....	...	1765
341. Wartburg.	Spring	26	49	54	28	33	131	88	51	...	S. 66 46 W.	.26	N. 63 E.	.15	
	Summer	19	35	34	23	26	134	132	57	...	S. 74 35 W.	.44	N. 42½ W.	.08	
	Autumn	3	21	38	39	43	128	150	33	...	S. 56 49 W.	.48	S. 20 W.	.09½	
	Winter	9	28	31	38	24	152	127	42	...	S. 61 49 W.	.45	S. 35 W.	.05	
	The year	57	133	157	128	126	545	497	183	...	S. 64 23 W.	.41			
342. Funfkirchen.	Spring	1311	...	1380	...	234	...	1265	...	...	N. 6 6 E.	.26	N. 88½ W.	.06	
	Summer	1321	...	1070	...	279	...	1124	...	...	N. 2 58 W.	.27½	N. 72 W.	.10	
	Autumn	1110	...	1649	...	169	...	1153	...	...	N. 27 48 E.	.26	S. 53½ E.	.04½	
	Winter	1167	...	1904	...	66	...	1022	...	...	N. 38 42 E.	.34	N. 85½ E.	.12½	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 18 38 E.	.27			
343. Buda.	Spring	215	117	33	67	100	107	28	253	...	N. 25 28 W.	.30	....	...	92
	Summer	180	110	44	48	83	104	39	312	...	N. 31 46 W.	.37	....	...	9[illegible]
	Autumn	163	142	29	63	105	118	26	264	...	N. 29 10 W.	.27	....	...	91
	Winter	244	89	29	97	101	142	26	182	...	N. 29 44 W.	.21	....	...	90
	The year	1929	1862	504	1368	1198	2261	598	5494	...	N. 24 23 W.	.30			
344. Althofen. Surface wind.	Spring	7	15	2	4	7	11	5	21	51	N. 39 20 W.	.16			
	Summer	20	28	9	9	6	8	8	30	66	N. 0 23 E.	.23½			
	Autumn	16	13	11	7	9	6	6	17	97	N. 8 37 W.	.10½			
	Winter	8	20	8	3	0	1	4	15	62	N. 16 39 E.	.26			
	The year	...	...	...	...	...	...	...	...	...	N. 6 23 W.	.18			
344. Althofen. Motion of clouds.	Spring	62	25	11	9	35	28	26	27	53	N. 38 26 W.	.17½			
	Summer	84	31	27	7	24	19	26	23	33	N. 1 16 W.	.29½			
	Autumn	85	18	20	3	42	18	18	18	51	N. 9 8 W.	.20			
	Winter	87	33	21	4	38	9	13	14	51	N. 13 46 E.	.28			
	The year	318	107	79	23	139	74	83	82	188	N. 5 15 W.	.22½			
344. Althofen. Aggregate.	Spring	69	40	13	13	42	39	31	48	104	N. 38 43 W.	.17			
	Summer	104	59	36	16	30	27	34	53	99	N. 0 43 W.	.27			
	Autumn	101	31	31	10	51	24	24	35	148	N. 4 31 W.	.16			
	Winter	95	53	29	7	38	10	17	29	113	N. 14 57 E.	.27			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 3 41 W.	.20½			
345. Nos. 343 and 344 combined.	Spring	284	157	46	80	142	146	59	301	104	N. 27 49 W.	.26	S. 76½ W.	.02	
	Summer	284	169	80	64	113	131	73	365	99	N. 23 33 W.	.32½	N. 26 W.	.07	
	Autumn	264	173	60	73	156	142	50	299	148	N. 23 49 W.	.23	S. 11½ E.	.02½	
	Winter	339	142	58	104	139	152	43	211	113	N. 14 9 W.	.21	S. 57 E.	.06	
	The year	1171	641	244	321	550	571	225	1176	464	N. 22 48 W.	.26	....	...	3287

[1] Nos. 338 and 339 combined. [2] Computed from the resultants for the seasons. [3] Computed by plotting.

(Nos. 346 to 350.) **Austrian Empire.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
346. Debreczin.	January	11	1	2	1	9	1	0	1	5	…………	…	………	…	155
	February	8	1	3	1	7	2	1	2	3	…………	…	………	…	142
	March	12	2	4	1	6	2	0	1	3	…………	…	………	…	155
	April	13	1	0	1	5	2	2	3	3	…………	…	………	…	150
	May	13	1	3	2	5	1	1	2	3	…………	…	………	…	355
	June	16	1	2	2	3	0	1	3	2	…………	…	………	…	150
	July	12	2	2	1	4	2	4	2	2	…………	…	………	…	155
	August	10	2	2	2	4	3	3	3	2	…………	…	………	…	155
	September	14	2	3	1	5	1	0	2	2	…………	…	………	…	150
	October	11	2	2	1	9	0	1	1	4	…………	…	………	…	155
	November	12	1	2	1	10	0	1	1	2	…………	…	………	…	150
	December	14	1	2	1	8	1	0	1	3	…………	…	………	…	155
	Spring	38	4	7	4	16	5	3	6	9	N. 4° 42′ E.	.25	N. 9° W.	.04	460
	Summer	38	5	6	5	11	5	8	8	6	N. 8 3 W.	.32	N. 34 W.	.12½	460
	Autumn	37	5	7	3	24	1	2	4	8	N. 23 18 E.	.20	S. 62½ E.	.06	455
	Winter	33	3	7	3	24	4	1	4	11	N. 27 1 E.	.11	S. 12 E.	.11½	452
	The year	146	17	27	15	75	15	14	22	34	N. 6 59 E.	.21½	………	…	1827
347. Hermannstadt. Surface wind.	Spring	2	5	1	19	9	9	3	32	12	S. 87 23 W.?	.15	………	…	92
	Summer	10	7	2	18	0	5	7	35	9	N. 33 41 W.?	.30	………	…	92
	Autumn	2	2	2	36	6	5	2	26	11	S. 20 34 E.?	.15	………	…	91
	Winter	8	6	3	20	5	10	5	32	1	N. 56 51 W.?	.18	………	…	90
	The year	22	20	8	93	20	29	17	125	33	N. 64 38 W.?	.12	………	…	365
Motion of clouds.	Spring	5	1	4	3	15	24	18	26	…	S. 77 52 W.?	.50	………	…	92
	Summer	20	5	7	15	14	12	20	61	…	N. 56 22 W.?	.39	………	…	92
	Autumn	2	3	1	7	23	19	11	26	…	S. 61 29 W.?	.43	………	…	91
	Winter	4	3	3	2	1	4	9	8	…	N. 59 11 W.	.38	………	..	90
	The year[2]	…	…	…	…	…	…	…	…	…	N. 86 9 W.	.38	………	…	365
Aggregate.	Spring	7	6	5	22	24	33	21	58	12	S. 80 2 W.	.33	S. 44½ W.	.13	92
	Summer	30	12	9	33	14	17	27	96	9	N. 49 13 W.	.35	N. 7½ W.	.20	92
	Autumn	4	9	3	43	29	24	13	52	11	S. 42 53 W.	.24	S. 1 W.	.06	91
	Winter	12	5	6	22	6	14	14	40	1	N. 57 50 W.	.23	N. 25 E.	.10	90
	The year[2]	…	…	…	…	…	…	…	..	…	N. 82 38 W.	.24	………	…	365
348. Lemberg.	January	2	1	2	2	4	6	12	2	0	…………	…	………	…	155
	February	1	0	1	4	6	2	10	4	0	…………	…	………	…	142
	March	1	2	1	6	6	4	6	5	0	…………	…	………	…	155
	April	3	1	3	3	4	1	10	5	0	…………	…	………	…	150
	May	3	2	3	2	4	3	10	4	0	…………	…	………	…	155
	June	4	2	3	2	3	2	8	6	0	…………	…	………	…	150
	July	2	2	2	1	3	2	15	4	0	…………	…	………	…	155
	August	1	1	2	3	6	4	11	3	0	…………	…	………	…	155
	September	2	1	1	3	5	3	11	4	0	…………	…	………	…	150
	October	2	2	1	4	6	4	9	2	1	…………	…	………	…	155
	November	1	1	1	5	2	4	11	4	1	…………	…	………	…	150
	December	2	1	1	4	5	4	10	4	0	…………	…	………	…	155
	Spring	7	5	7	11	14	8	26	14	0	S. 73 14 W.	.26½	………	…	460
	Summer	7	5	7	6	12	8	34	13	0	S. 86 21 W.	.37	………	…	460
	Autumn	5	4	3	12	13	11	31	10	2	S. 65 31 W.	.38	………	…	455
	Winter	5	2	4	10	15	12	32	10	0	S. 64 2 W.	.43	………	…	452
	The year	24	16	21	39	54	39	123	47	2	S. 71 51 W.	.36	………	…	1827
349. Stanislau. Surface wind.	Spring	17	17	2	14	10	7	9	15	1	N. 2 29 W.	.16	………	…	92
	Summer	23	28	4	11	2	4	3	17	0	N. 18 1 E.	.48	………	…	92
	Autumn	16	10	4	38	3	9	2	9	0	S. 73 41 E.	.27	………	…	91
	Winter	26	4	0	14	17	5	1	23	0	N. 28 51 W.	.19	………	…	90
	The year	82	59	10	77	32	25	15	64	1	N. 23 20 E.	.19	………	…	365
Motion of clouds.	Spring	0	2	0	10	6	6	14	0	0	S. 31 33 W.	.49	………	…	92
	Summer	8	2	7	0	12	7	36	8	0	S. 87 11 W.	.48	………	…	92
	Autumn	0	0	2	4	12	12	10	2	0	S. 34 33 W.	.63	………	…	91
	Winter	0	0	0	2	0	2	6	6	0	N. 82 6 W.	.65	………	…	90
	The year[2]	…	…	…	…	…	…	…	…	…	S. 60 56 W.	.50	………	…	365
Aggregate.	Spring	17	19	2	24	16	13	23	15	1	S. 83 51 W.	.08	………	…	92
	Summer	31	30	11	11	14	11	39	25	…	N. 31 13 W.	.27½	………	…	92
	Autumn	16	10	6	42	15	21	12	11	…	S. 15 48 E.	.22½	………	…	91
	Winter	26	4	0	16	17	7	7	29	…	N. 48 43 W.	.23	………	…	90
	The year[2]	…	…	…	…	…	…	…	…	…	N. 64 09 W.	.09	………	…	365
350. Eastern Galicia.[1]	Spring	24	24	9	35	30	21	49	29	1	S. 76 26 W.	.15½	N. 89 E.	.05½	
	Summer	36	34	14	23	27	22	70	35	2	N. 65 7 W.	.23½	N. 3 W.	.13½	
	Autumn	21	12	10	52	30	33	44	21	0	S. 41 54 W.	.28	S. 6 E.	.17½	
	Winter	31	6	4	26	32	19	39	39	0	S. 88 56 W.	.27½	N. 65 W.	.07½	
	The year	…	…	…	…	…	…	…	…	…	S. 79 51 W.	.21			

[1] Nos. 348 and 349 combined.

[2] Computed from the resultants for the seasons.

(Nos. 351 to 367.) **Russia and Sea of Azof.**

Observed at the following places, viz. :—

Astrachan, during the years 1824 to 1834, 1837, 1838, 1845 to 1850, all inclusive; 1853 and 1857, and also, in the Addendum to this zone, the Port of Astrachan, for the years 1845 to 1866 inclusive.

Azof (Sea of), in the months of April, May and June; date not preserved.

Charkov, by Prof. Lapschin, at the University of Charkov, during the years 1844 to 1848 inclusive; also by Mr. Morosow, during the years 1851, '52, '54, '59, '62, '63, '64, '66 and '67.

Dniestrovski Tzaregradsky Znak, during the years 1865 and 1866, by Glazoff.

Ekaterinoslav, during the years 1833 to 1842 inclusive.

Gouriev, by Chevalier Kahnikoff, from October, 1828, to April, 1829, inclusive.

Kertsch, during a period of two years; date not preserved.

Kischinev, by Denjink, from June, 1844, to June, 1854.

Orlov, by Dersken, during the years 1842 to 1854 inclusive.

Lougan, the years 1838 to 1850 incl., 1853 and 1857. Computations for the first series by Spasske.

Nijne Tchirsk, from December, 1852, to November, 1853, inclusive, and 1857.

Nikolaief, during the years 1827 to 1835 inclusive; also observed in 1865 and 1866.

Odessa, from March, 1820, to February, 1825, inclusive, and during the years 1829 and 1830.

Otchakof, during the years 1865 and 1866, by Zasabine.

Poltava, during the years 1824 to 1831, and 1836 to 1848, both inclusive, and 1857.

Taganrog, by Mann, during the years 1817 to 1832 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		No. of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
351. Kischinev.	January	2602	785	280	1108	946	1118	344	2817	...	N. 29° 42′ W.	.30	....	...	310
	February	1643	390	154	1277	827	1418	603	3688	...	N. 58 00 W.	.33½	....	...	282
	March	1441	581	140	1075	1505	1097	484	3677	...	N. 61 05 W.	.29	....	...	310
	April	1689	922	300	956	1522	1011	378	3222	...	N. 45 36 W.	.24	....	...	300
	May	1183	688	108	1150	1699	1430	312	3430	...	N. 76 25 W.	.24	....	...	310
	June	1167	800	211	644	900	1167	478	4633	...	N. 49 48 W.	.43½	....	...	300
	July	1312	376	65	613	656	548	624	5806	...	N. 45 59 W.	.60	....	...	310
	August	1710	742	237	667	839	903	462	4440	...	N. 41 14 W.	.45	....	...	310
	September	1800	645	244	733	1033	1078	300	4167	...	N. 43 56 W.	.40	....	...	300
	October	1183	667	376	1194	1301	1677	624	2978	...	N. 78 36 W.	.21½	....	...	310
	November	1867	567	244	1522	1378	1378	433	2611	...	N. 65 46 W.	.17	....	...	300
	December	2333	839	215	817	989	989	656	3161	...	N. 37 13 W.	.36	....	...	310
	Spring	1438	730	183	1060	1575	1179	391	3443	...	N. 60 57 W.	.25	S. 21° E.	.09½	920
	Summer	1396	639	171	641	798	873	521	4960	...	N. 45 39 W.	.49½	N. 37 W.	.16	920
	Autumn	1617	626	288	1150	1237	1378	452	3252	...	N. 58 30 W.	.25	S. 26 E.	.09	910
	Winter	2193	671	216	1067	921	1175	534	3222	...	N. 41 55 W.	.32½	N. 52 E.	.05	902
	The year	1661	667	214	980	1133	1151	475	3719	...	N. 50 04 W.	.33	....	...	3652
352. Dniestrovski Znak.	Spring	48	91	97	127	64	29	12	52	30	S. 82 7 E.	.33½	S. 46 E.	.20	
	Summer	112	63	59	100	67	39	11	66	35	N. 66 55 E.	.17½	S. 50 W.	.04	
	Autumn	114	66	81	57	77	27	13	93	18	N. 37 55 E.	.21	N. 41½ W.	.10	
	Winter	114	84	80	65	38	42	38	54	25	N. 39 4 E.	.23	N. 29 W.	.10	
	The year	388	304	317	349	246	137	74	265	108	N. 64 29 E.	.21			
353. Odessa.[1]	January	1962	1561	1287	865	992	633	1287	1413	...	N. 7 34 E.	.20	....	...	217
	February	961	1851	1036	745	986	1130	1779	1514	...	N. 37 25 W.	.13	....	...	193
	March	1305	1284	1200	1221	2316	716	926	1032	...	S. 47 09 E.	.11	....	...	217
	April	1564	1167	1498	1344	2819	374	859	374	...	S. 53 39 E.	.23	....	...	210
	May	1450	630	1156	1218	3067	882	798	798	...	S. 12 50 E.	.21½	....	...	217
	June	2261	370	739	1152	2413	544	1283	1239	...	S. 73 40 W.	.07½	....	...	210
	July	2248	399	777	714	2710	462	1092	1597	...	N. 83 28 W.	.10	....	...	217
	August	2936	617	660	1064	2362	489	766	1106	...	N. 3 46 W.	.07	....	...	217
	September	2564	1068	705	1154	1966	684	833	1026	...	N. 16 31 E.	.08	....	...	210
	October	2067	1356	1067	1311	2133	444	556	1067	...	N. 73 05 E.	.14	....	...	217
	November	1793	1494	1080	1149	1885	1103	644	851	...	S. 88 20 E.	.09	....	...	210
	December	2174	761	739	978	2457	1304	804	783	...	S. 21 06 W.	.08½	....	...	217
	Spring	1440	1027	1285	1261	2734	657	861	735	...	S. 36 50 E.	.17½	....	...	644
	Summer	2482	462	725	977	2495	498	1047	1314	...	N. 71 16 W.	.06	....	...	644
	Autumn	2141	1306	951	1205	1995	744	678	981	...	N. 65 05 E.	.09	....	...	637
	Winter	1699	1391	1020	863	1478	1022	1290	1237	...	N. 20 15 W.	.08	....	...	631
	The year	1940	1046	995	1076	2175	730	969	1067	...	S. 85 28 E.	.02½	....	...	2556

[1] The observations at this place were first published in the Memoirs of the Society of Rural Economy of Southern Russia, from whence they were quoted by Wesselowski, who reduced them to parts of 10,000, and computed the resultants.

(Nos. 354 to 357.) **Russia.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative prevalence of winds from the different points of the compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
354. Otchakof.	January	34	40	55	13	36	19	22	24	5					
	February	41	48	72	15	3	7	13	19	4					
	March	14	32	90	43	19	4	13	22	2					
	April	52	43	27	7	26	35	21	17	4					
	May	29	35	27	17	23	42	38	20	12					
	June	49	21	37	8	13	39	38	27	7					
	July	44	54	35	9	25	32	23	15	6					
	August	52	22	32	8	15	38	53	19	8					
	September	58	40	28	12	10	12	28	41	11					
	October	44	46	40	32	35	8	19	21	2					
	November	61	22	40	25	26	10	13	27	6					
	December	38	37	44	14	8	7	27	66	4					
	Spring	95	110	144	67	68	81	72	59	18	N. 66° 55′ E.	.15	S. 21½° E.	.12	
	Summer	145	97	104	25	53	109	114	61	21	N. 21 58 W.	.16	S. 81 W.	.16	
	Autumn	163	108	108	69	71	30	60	89	19	N. 28 53 E.	.26	N. 29 E.	.06½	
	Winter	113	125	171	42	47	33	62	109	13	N. 33 29 E.	.30	N. 42 E.	.11	
	The year	516	440	527	203	239	253	308	318	71	N. 28 49 E.	.19½			
355. Northern shore of Black Sea.[1]	Spring	431	406	498	446	679	241	256	258	48	S. 61 45 E.	.17	S. 31 E.	.15	
	Summer	753	252	308	320	619	247	334	390	56	N. 21 3 W.	.06	N. 86½ W.	.09	
	Autumn	705	435	379	367	547	206	208	378	37	N. 44 47 E.	.14	N. 33½ E.	.05½	
	Winter	566	483	455	280	380	279	358	410	38	N. 19 29 E.	.14	N. 16 W.	.08½	
	The year	2455	1576	1640	1413	2225	973	1156	1436	179	N. 53 7 E.	.08½			
356. Niko-laief.[2]	Spring	111	132	54	87	129	47	28	62	86	N. 76 45 E.	.14½	S. 65½ E.	.12	
	Summer	114	104	14	40	109	65	45	132	113	N. 35 3 W.	.16	N. 69½ W.	.13	
	Autumn	86	124	18	80	84	58	44	109	125	N. 0 9 E.	.09½	N. 71 W.	.03	
	Winter	81	151	46	65	87	78	31	78	103	N. 46 21 E.	.11	S. 80 E.	.05	
	The year	2203	2320	1277	1283	1464	1282	1136	1528	427	N. 20 29 E.	.09			
357. Poltava. 1824 to 1831, and 1836 to 1848.	January	490	2517	1681	785	802	1791	1149	785	...	N. 79 19 E.	.10½			
	February	586	1819	1595	940	526	2215	1776	543	...	S. 20 01 W.	.05			
	March	419	1196	2309	964	665	2168	1659	620	...	S. 10 13 E.	.12			
	April	942	1777	2015	802	385	1638	1376	1065	...	N. 33 22 E.	.10			
	May	447	1198	1858	929	660	1826	2078	994	...	S. 49 45 W.	.09			
	June	282	829	529	1226	441	2063	2981	1649	...	S. 78 37 W.	.37			
	July	534	835	651	728	602	2660	2495	1495	...	S. 77 32 W.	.37½			
	August	412	1763	1191	680	269	2140	1916	1629	...	N. 71 48 W.	.17½			
	September	438	2411	1714	955	500	1714	1205	1063	...	N. 61 26 E.	.10½			
	October	526	1464	1684	833	421	2105	2048	919	...	S. 72 00 W.	.09			
	November	440	2245	1834	776	327	1338	1964	1076	...	N. 17 10 E.	.10			
	December	688	1896	1792	456	472	1456	2008	1232	...	N. 22 55 W.	.11½			
	Spring	606	1390	2061	898	570	1877	1704	893	...	S. 3 38 E.	.03			
	Summer	409	1142	790	878	437	2288	2464	1591	...	S. 83 39 W.	.30			
	Autumn	468	2040	1744	855	416	1719	1739	1019	...	N. 16 21 E.	.04			
	Winter	588	2077	1689	727	600	1821	1644	853	...	N. 28 02 E.	.03			
	The year	518	1662	1571	840	506	1926	1888	1089	...	N. 89 08 W.	.07			
1850 and 1857.	Spring	2	64	18	20	13	13	2	2	141	N. 79 14 E.?	.24	....	...	92
	Summer	2	74	28	11	8	82	53	54	240	N. 71 13 W.	.12	....	...	184
	Autumn	10	63	45	26	10	71	35	27	256	S. 36 15 E.	.01	....	...	182
	Winter	4	11	10	13	29	4	8	49	142	N. 31 19 W.?	.13	....	...	90
	The year[4]	...	...	...	...	...	...	...	...	...	N. 18 43 E.	.05	....	...	548
Aggregate.[3]	Spring	610	1518	2097	938	596	1903	1708	897	10804	S. 26 45 E.	.01½	S. 68½ E.	.05	
	Summer	413	1290	846	900	453	2452	2570	1699	8172	S. 84 33 W.	.17	S. 82 W.	.13½	
	Autumn	488	2166	1834	907	436	1861	1809	1073	9432	N. 17 45 E.	.02	N. 67 E.	.05	
	Winter	676	2099	1709	753	658	1829	1660	951	11378	N. 15 59 E.	.02	N. 66½ E.	.05	
	The year[4]	...	...	...	...	...	...	...	...	...	N. 88 4 W.	.04			

[1] Observed at Dniestrovski, Odessa and Otchakof, using only one-fifth of the numbers for Odessa (No. 353), in order to give them their proper weight.
[2] Seasons for the years 1865 and 1866 only.
[3] Allowing for calms for the entire period in the same proportion as in the years 1850 and 1857.
[4] Computed from the resultants for the seasons.

(Nos. 358 to 362.) **Russia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S.E. or between S. & E.	South.	S.W. or between S. & W.	West.	N.W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
358. Ekaterinoslav	January	726	741	1893	1703	2712	1120	694	410	...	S. 30° 14′ E.	.36½	....	...	310
	February	366	989	2234	1282	2326	1154	1099	549	...	S. 11 38 E.	.26½	....	...	282
	March	602	1304	836	1773	3194	1288	351	652	...	S. 20 50 E.	.36	....	...	310
	April	737	947	1772	2561	1544	930	579	930	...	S. 50 28 E.	.30½	....	...	300
	May	345	549	2680	1912	1066	1175	1630	643	...	S. 36 14 E.	.25½	....	...	310
	June	395	433	1898	883	1203	1710	2481	996	...	S. 43 48 W.	.22½	....	...	300
	July	630	630	1713	866	1083	1437	2854	787	...	S. 56 58 W.	.20	....	...	310
	August	643	478	1985	717	625	1801	3309	441	...	S. 66 20 W.	.22½	....	...	310
	September	476	575	2242	1310	1607	893	2381	516	...	S. 5 48 E.	.19	....	...	300
	October	428	1234	2072	1250	1447	954	1891	724	...	S. 32 02 E.	.14	....	...	310
	November	648	1018	1593	1093	1722	1130	1907	889	...	S. 40 13 W.	.04	....	...	300
	December	388	1164	1834	1869	1217	1481	1358	688	...	S. 29 56 E.	.22	....	...	310
	Spring	561	933	1763	2082	1935	1131	853	742	...	S. 34 54 E.	.30	S. 69½° E.	.14	920
	Summer	556	514	1865	822	970	1649	2881	741	...	S. 54 12 W.	21½	N. 72½ W.	.23	920
	Autumn	517	942	1969	1218	1592	992	2060	710	...	S. 9 02 E.	.15	N. 21 W.	.05	910
	Winter	493	965	1987	1618	2085	1252	1050	549	...	S. 30 17 E.	.29½	S. 61 E.	.12	902
	The year	532	839	1896	1435	1645	1256	1711	685	...	S. 12 15 E.	.20	....	...	3652
359. Orlov.	January	1784	...	4849	...	2261	...	1106	...	...	S. 83 0 E.	.38	....	...	403
	February	1123	...	3644	...	3616	...	1617	...	...	S. 39 0 E.	.32	....	...	367
	March	1712	...	3151	...	3449	...	1687	...	...	S. 40 0 E.	.23	....	...	403
	April	1082	...	3480	...	4021	...	1417	...	...	S. 35 0 E.	.36	....	...	390
	May	932	...	3451	...	4257	...	1360	...	...	S. 32 0 E.	.39	....	...	403
	June	1250	...	2344	...	4427	...	1979	...	...	S. 6 0 E.	.32	....	...	390
	July	2233	...	2035	...	3871	...	1861	...	...	S. 6 0 E.	.16½	....	...	403
	August	1646	...	4506	...	2633	...	1215	...	...	S. 73 0 E.	.34½	....	...	403
	September	1790	...	4211	...	2421	...	1577	...	...	S. 76 0 E.	.27	....	...	390
	October	1105	...	4395	...	3188	...	1311	...	...	S. 56 0 E.	.37	....	...	403
	November	1508	...	4286	...	2910	...	1296	...	...	S. 65 0 E.	.33	....	...	390
	December	1766	...	3383	...	2935	...	1916	...	...	S. 51 0 E.	.19	....	...	403
	Spring	1242	...	3361	...	3909	...	1488	...	...	S. 35 05 E.	.32½	S. 18 W.	08½	1196
	Summer	1710	...	2962	...	3644	...	1685	...	...	S. 33 26 E.	.23	S. 85 W.	.08½	1196
	Autumn	1468	...	4297	...	2840	...	1395	...	...	S. 64 42 E.	.32	N. 59½ E.	.09½	1183
	Winter	1558	...	3959	...	2937	...	1546	...	...	S. 60 15 E.	.28	N. 35 E.	.05	1173
	The year	1494	...	3645	...	3332	...	1529	...	...	S. 49 02 E.	.28	....	...	4748
360. Kertsch.	The year	11	7	14	6	10	15	22	15	...	N. 84 50 W.	.20	....	...	730
361. Charkov, 1844–43.	January	269	591	2527	1505	430	1022	1237	2419	...	N. 63 03 E.	.04	....	...	155
	February	176	412	1765	2177	706	1353	1823	1588	...	S. 10 46 W.	.16	....	...	141
	March	376	645	2581	2043	484	807	1290	1774	...	S. 73 18 E.	.14	....	...	155
	April	111	611	1556	2000	556	1056	1444	2666	...	S. 66 26 W.	.07	....	...	150
	May	269	968	1774	1452	484	1075	1720	2258	...	N. 64 53 W.	.06½	....	...	155
	June	278	611	833	944	444	1167	2111	3611	...	N. 69 38 W.	.38	....	...	150
	July	430	807	1290	1129	376	753	2204	3011	...	N. 57 18 W.	.26	....	...	155
	August	269	1613	2204	1613	269	645	1022	2365	...	N. 47 55 E.	.18	....	...	155
	September	667	1278	2278	1555	222	889	1167	1944	...	N. 48 19 E.	.15	....	...	150
	October	430	914	1882	1882	430	1022	1720	1720	...	S. 46 35 E.	.03	....	...	155
	November	278	556	1778	2389	444	944	1556	2055	...	S. 15 21 E.	.07	....	...	150
	December	269	968	1882	2097	538	1021	1129	2096	...	S. 66 49 E.	.08	....	...	155
	Spring	252	741	1970	1832	508	979	1485	2232	...	S. 15 04 E.	.01½	S. 26½ E.	.04	460
	Summer	326	1010	1442	1229	363	855	1779	2996	...	N. 48 14 W.	.19½	N. 66½ W.	.08	460
	Autumn	458	916	1979	1942	365	952	1481	1906	...	N. 85 07 E.	.05	N. 47 E.	.02½	455
	Winter	238	657	2058	1926	558	1132	1396	2034	...	S. 23 45 E.	.06	S. 70 E.	.0	451
	The year	319	831	1862	1732	449	980	1535	2292	...	N. 47 02 W.	.02	....	...	1826
361(*a*). Charkov, 1844–67.	See Addendum at the end of this Zone.														
362. Sea of Azof.	April, May, June	6	19	3	3	3	9	7	6	7	N. 4° 27′ E.	.19½			

(Nos. 363 to 366.) **Russia.—*Continued.***

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
363. Taganrog.	January	874	1110	3808	805	1163	516	919	805	...	N. 87° 49′ E.	.33	....	...	496
	February	1072	1015	3846	614	1227	393	966	867	...	N. 81 43 E.	.32	....	...	452
	March	610	1128	4042	927	1097	804	842	549	...	S. 81 55 E.	.37	....	...	496
	April	503	724	3351	1141	1385	842	1424	629	...	S. 59 1 E.	.26	....	...	480
	May	331	422	2922	1220	1845	889	1559	813	...	S. 31 51 E.	.25	....	...	496
	June	570	408	2018	655	1741	1195	2357	1055	...	S. 39 3 W.	.18½	....	...	480
	July	693	567	1920	843	1137	941	3080	919	...	S. 69 37 W.	.21	....	...	496
	August	893	793	2918	885	1201	1016	1570	724	...	S. 66 9 E.	.14	....	...	496
	September	933	689	3802	620	933	482	1798	742	...	N. 83 38 E.	.21	....	...	480
	October	700	809	4568	848	910	335	1315	514	...	S. 88 20 E.	.38	....	...	496
	November	856	1033	3845	865	1167	529	982	722	...	S. 89 0 E.	.33	....	...	480
	December	819	1041	4578	787	898	429	978	469	...	N. 88 18 E.	.42½	....	...	496
	Spring	187	294	1337	427	563	329	497	259	524	S. 60 55 E.	.24	S. 9½° E.	.11½	1472
	Summer	282	218	896	312	533	412	919	353	489	S. 27 54 W.	.09	S. 72 W.	.24½	1472
	Autumn	314	317	1542	293	374	169	521	249	579	N. 89 32 E.	.26	N. 85 E.	.07	1456
	Winter	349	401	1547	280	416	170	362	271	536	N. 86 15 E.	.31	N. 78½ E.	.12	1444
	The year	1132	1230	5322	1312	1886	1080	2299	1132	2128	S. 88 45 E.	.19	....	...	5844
364. Lougan. 1838 to 1850.	January	55	133	293	87	84	113	197	37	...	S. 71 0 E.	.16			
	February	42	47	253	125	112	156	236	28	...	S. 02 0 E.	.21½			
	March	63	100	272	92	111	96	209	56	...	S. 52 0 E.	.11½			
	April	107	110	267	82	128	83	175	49	...	S. 80 0 E.	.13½			
	May	65	120	340	58	104	82	168	65	...	S. 87 0 E.	.19			
	June	121	73	132	46	79	102	355	93	...	N. 79 0 W.	.28			
	July	94	105	197	43	111	55	280	113	...	N. 55 0 W.	.11½			
	August	107	166	292	60	62	44	195	73	...	N. 51 0 E.	.22½			
	September	69	92	389	96	66	66	168	55	...	S. 88 0 E.	.27			
	October	58	88	354	49	88	69	242	50	...	S. 83 0 E.	.12½			
	November	39	102	270	76	120	108	234	51	...	S. 25 0 E.	.11½			
	December	68	123	280	74	63	110	219	62	...	N. 87 0 E.	.08			
	Spring	78	110	293	77	114	87	184	57	...	S. 76 0 E.	.14			
	Summer	107	115	207	50	84	67	277	93	...	N. 37 0 W.	.11			
	Autumn	55	94	338	74	91	81	215	53	...	S. 74 0 E.	.15			
	Winter	55	101	275	95	86	126	217	42	...	S. 42 0 E.	.11½			
	The year	74	105	278	74	94	90	223	61	...	S. 76 0 E.	.08			
1838, '50, '53 and '57.	Spring	160	511	1023	305	274	290	336	148	809	S. 85 53 E.	.25			
	Summer	316	305	420	140	219	266	673	285	1251	N. 50 54 W.	.12			
	Autumn	124	400	858	101	188	274	472	153	1247	N. 81 58 E.	.12			
	Winter	148	330	751	240	180	402	457	79	1194	S. 61 23 E.	.11			
	The year	748	1546	3052	786	861	1232	1938	665	4501	N. 89 3 E.	.09			
Aggregate.[1]	Spring	940	1611	3953	1075	1414	1160	2176	718	3464	S. 80 9 E.	.14	S. 78½ E.	.07	
	Summer	1225	1282	2179	565	933	835	3027	1075	5317	N. 42 22 W.	.08	N. 60½ W.	.14	
	Autumn	582	1183	3675	718	946	949	2264	595	5300	S. 80 16 E.	.10	S. 78 E.	.03	
	Winter	606	1172	3103	1032	897	1452	2265	429	5074	S. 49 22 E.	.09	S. 2 W.	.05	
	The year	3353	5248	12910	3390	4190	4396	9732	2817	19155	S. 81 19 E.	.07			
365. Nijne Tchirsk.	Spring	46	101	116	56	55	4	48	62	72	N. 64 15 E.	.26	N 74½ E.	.17	
	Summer	23	78	100	37	6	25	160	63	39	N. 29 19 W.	.16	N. 64½ W.	.16½	
	Autumn	17	95	56	86	19	31	92	72	87	N. 29 52 E.	.07	S. 75 W.	.04	
	Winter	22	109	74	83	41	41	122	14	39	S. 68 2 E.	.09½	S. 10 E.	.11	
	The year	108	383	346	262	121	101	422	211	237	N. 46 42 E.	.10			
366. Astrachan. 1824 to 1834.	January	494	2592	2469	1235	370	741	617	1482	...	N. 61 50 E.	.34			
	February	417	2361	2222	1806	278	555	695	1667	...	N. 65 40 E.	.32			
	March	227	2273	1932	1818	455	1250	568	1477	...	N. 83 52 E.	.23			
	April	370	1728	1605	1975	494	864	988	1975	...	N. 68 32 E.	.13			
	May	649	1688	1299	1688	649	1039	909	2078	...	N. 38 09 E.	.09			
	June	633	1266	886	2025	759	1645	1266	1519	...	S. 21 20 W.	.08			
	July	274	2054	959	2740	411	1233	959	1370	...	S. 71 14 E.	.16			
	August	506	2531	1139	2152	633	1013	506	1519	...	N. 77 02 E.	.22			
	September	759	2405	2152	1646	380	633	759	1266	...	N. 64 58 E.	.32			
	October	471	1765	1412	2117	941	824	588	1882	...	N. 89 10 E.	.16½			
	November	633	1392	1519	2278	253	1139	886	1900	...	N. 74 47 E.	.11			
	December	353	2236	1647	2117	353	824	941	1529	...	N. 74 41 E.	.22			
	Spring	415	1896	1612	1827	533	1051	822	1843	...	N. 70 31 E.	.14½			
	Summer	471	1950	995	2306	601	1297	910	1469	...	S. 77 04 E.	.11½			
	Autumn	621	1854	1694	2014	525	865	744	1683	...	N. 73 28 E.	.19½			
	Winter	421	2396	2113	1719	334	707	751	1559	...	N. 66 28 E.	.29			
	The year	482	2024	1603	1966	498	980	807	1639	...	N. 74 32 E.	.18			

[1] Allowing for calms in the first series the same proportion as given in the second.

(Nos. 366 to 367.) **Russia.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of wind.	Monsoon influences. Direction.	Force.	Number of days.
366. Astrachan.—*Continued.* 1845 to 1850.	January	710	1012	2045	1464	581	732	2013	1442	...	N. 38° 10′ E.	.04			
	February	685	575	1687	2543	929	526	1345	1711	...	S. 50 26 E.	.12½			
	March	684	640	1336	2384	1413	662	1347	1534	...	S. 23 00 E.	.14½			
	April	741	954	2479	3020	954	256	569	1026	...	S. 73 33 E.	.39½			
	May	877	1414	1443	1556	1245	849	1315	1301	...	S. 77 52 E.	.07			
	June	1111	1274	1600	1304	741	800	1555	1615	...	N. 9 49 E.	.09½			
	July	1105	1446	2382	1521	818	746	1090	890	...	N. 81 25 E.	.22½			
	August	832	1503	2292	2321	1022	584	686	759	...	S. 79 09 E.	.34			
	September	653	1205	2351	2322	595	464	1364	1045	...	S. 82 28 E.	.24			
	October	529	989	2521	2033	780	334	1574	1240	...	S. 79 57 E.	.20			
	November	346	418	1962	2828	996	462	1674	1313	...	S. 37 07 E.	.22			
	December	902	1137	2247	1942	721	250	1109	1692	...	N. 72 02 E.	.20½			
	Spring	767	1003	1753	2320	1204	589	1077	1287	...	S. 62 44 E.	.19			
	Summer	1016	1408	2091	1715	860	710	1110	1088	...	N. 83 51 E.	.19			
	Autumn	509	871	2278	2394	790	420	1537	1199	...	S. 67 02 E.	.20½			
	Winter	766	908	1993	1983	744	503	1489	1615	...	N. 86 37 E.	.10½			
	The year	765	1047	2029	2103	900	555	1303	1297	...	S. 77 45 E.	.17			
1853 and 1857.	Spring	10	34	76	86	8	13	18	53	162	S. 86 8 E.	.21			
	Summer	12	13	53	74	14	36	60	87	203	S. 74 23 W.	.06			
	Autumn	6	54	69	88	11	21	43	69	175	N. 85 32 E.	.12			
	Winter	11	61	97	20	4	6	52	34	162	N. 52 59 E.	.21			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 76 31 E.	.11			
Aggregate.[1]	Spring	...	...	...	...	...	...	...	...	...	N. 88 27 E.	.16½	S. 2½° E.	.01	
	Summer	...	...	...	...	...	...	...	...	...	S. 81 11 E.	.15	S. 23 W.	.04	
	Autumn	...	...	...	...	...	...	...	...	...	N. 87 47 E.	.18	S. 60½ E.	.01½	
	Winter	...	...	...	...	...	...	...	...	...	N. 68 39 E.	.18	N. 2 E.	.05	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 85 35 E.	.16½			
366(*a*). Port of Astrachan, 1845 to 1866.	See Addendum at the end of this Zone.														
367. Gouriev.	7 months	...	...	...	...	...	...	...	...	...	N. 85 26 E.	.28			

[1] Resultants combined, giving weight in proportion to the number of years.
[2] Computed from the resultants for the seasons.
[3] This result for 19 years, combined with that of Mr. Kahnikoff for the years 1837 and 1838, viz., N. 45° E. .164, gives as the annual resultant for 21 years N. 81° 57′ E. .16.

(Nos. 367(*a, b, c*).) **Kirghiz Steppes.**

Baron Humboldt, in his work on Central Asia, speaking of the observations of M. Platon de Tchihatcheff, in the region northeasterly from the Caspian Sea—lat. 46° to 51°, and long. 52° to 56°—says that from December 1st, 1839, till April 1st, 1840, a period of 121 days, the wind blew for more than 79 days, generally from E.N.E. and N.E., sometimes from the east.[1]

Chevalier Kahnikoff in a private letter gives a description of the winds of this region, of which the following is a translation:—

"Having compiled the journals of travels in the Kirghiz Steppes, between the Caspian Sea, Aral Lake, and the Mouhogjars Mountains, from 1826 to 1841 inclusive, I find the resultant direction of the winds over this region to be S. 89° 12′ W., and its ratio .307.[2]

"At the east of the Mouhogjars Mountains (*i. e.* east of 75° from Ferro[3]), N.E. winds predominate, a fact that appears not only from direct observations, but also from the instinct of animals that burrow, very common in this part of the Steppe, which always open their holes towards the southwest, so that the prevailing N.E. wind may not fill them with sand. This direction is the prevailing one as far as the meridian and latitude of Bokhara, as I have shown by my observations in that city, published in Humboldt's *Asie Centrale*."[4]

[1] No. 367(*a*).
[2] No. 367(*b*).
[3] Longitude 56° 53′ E. from Greenwich. Mount Gruk, the highest peak of these mountains, is in about latitude 48° 40′ and longitude 58° 50′.
[4] No. 367(*c*).

(Nos. 368 to 375(*a*).) **Central and Eastern Asia.**

Observed at the following places, viz.:—

Aniva Bay, in District of Sachalin, Siberia, from October, 1853, to May, 1854, inclusive, by Lieutenant Radanowskij.

Fort Aralskoe (or Raimsk), Turkestan, from December, 1850, to November, 1853, inclusive.

Fort No. 1, Turkestan, during the years 1865 and 1866, by Proscouranoff, also 1857.

Fort Ouralsk, Turkestan, during the years 1865 and 1866, by Witkewitch.

Fort Perowski, Turkestan, during the year 1857.

Urga, Mongolia, by Dr. H. Frietsche, during the year 1870 and ten months of 1871; also by Jsodbojef, during the years 1870, 1871, in Addendum at the end of this Zone, where the force is given on a scale from 1 to 10.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
368. Fort Ouralsk.	January	25	9	30	9	44	14	39	16	0					
	February	40	29	15	7	23	11	33	10	0					
	March	47	11	49	8	22	1	24	22	2					
	April	28	8	26	7	37	17	43	13	1					
	May	29	3	42	5	29	4	60	12	2					
	June	22	14	24	9	24	8	52	13	14					
	July	33	9	43	8	14	8	40	23	8					
	August	51	8	30	0	16	10	49	17	5					
	September	34	7	24	9	27	8	51	14	6					
	October	29	5	39	7	44	9	36	12	0					
	November	28	9	49	5	28	11	44	3	3					
	December	25	0	4	12	56	23	49	17	0					
	Spring	104	22	117	20	88	22	127	47	5	N. 39° 39′ W.	.08	N. 59° E.	.05½	184
	Summer	106	31	97	17	54	26	141	53	27	N. 39 9 W.	.19	N. 12 W.	.12	184
	Autumn	91	21	112	21	99	28	131	29	9	S. 76 10 W.	.05½	S. 43 E.	.06½	182
	Winter	90	38	49	28	123	48	121	43	0	S. 71 49 W.	.17½	S. 37 W.	.11½	180
	The year	391	112	375	86	364	124	520	172	41	N. 69 41 W.	.10½			730
369. Fort Aralskoe.	January	1153	2559	1351	1315	1027	667	1009	919	...	N. 58 53 E.	.23	....	...	93
	February	935	2520	2480	955	793	366	915	1037	...	N. 60 29 E.	.34½	....	...	85
	March	960	3316	2088	1397	253	84	976	926	...	N. 54 32 E.	.45½	....	...	93
	April	1306	2216	2594	1323	189	361	1203	808	...	N. 56 02 E.	.37	....	...	90
	May	1519	2440	973	785	256	700	1809	1519	...	N. 2 31 W.	.30	....	...	93
	June	1383	2323	1454	957	408	337	1826	1312	...	N. 16 25 E.	.27	....	...	90
	July	1591	787	297	402	262	612	4440	1608	...	N. 64 44 W.	.54	....	...	93
	August	2928	1497	609	247	164	329	2401	1826	...	N. 23 56 W.	.51	....	...	93
	September	856	3734	965	328	437	893	1767	1020	...	N. 13 39 E.	.30	....	...	90
	October	1636	2236	1218	673	1273	709	1545	709	...	N. 26 11 E.	.16	....	...	93
	November	481	5416	1922	462	388	111	813	407	...	N. 52 13 E.	.61½	....	...	90
	December	428	1267	1233	2808	1130	925	1507	702	...	S. 36 37 E.	.24	....	...	93
	Spring	1262	2657	1885	1168	233	382	1329	384	...	N. 40 44 E.	.34	....	...	276
	Summer	1967	1536	787	535	278	426	2889	1582	...	N. 32 45 W.	.38	....	...	276
	Autumn	991	3795	1368	488	699	571	1375	712	...	N. 37 44 E.	.34	....	...	273
	Winter	839	2115	1688	1693	983	653	1144	886	...	N. 81 37 E.	.21½	....	...	271
	The year	1265	2526	1432	971	548	508	1684	1066	...	N. 26 29 E.	.24½	....	...	1096
370. Fort No. 1.	January	25	60	35	15	21	15	10	2	2					
	February	23	45	16	21	6	13	19	24	0					
	March	38	55	34	9	5	7	14	24	0					
	April	14	32	26	12	16	22	38	19	1					
	May	12	51	23	13	10	10	37	29	1					
	June	23	48	20	7	3	8	30	38	3					
	July	13	28	10	3	12	12	40	60	8					
	August	19	51	21	3	9	15	32	32	4					
	September	12	50	28	4	5	14	46	19	1					
	October	23	37	33	30	13	12	15	22	1					
	November	14	53	44	6	10	16	19	16	2					
	December	22	14	16	54	32	12	6	28	2					
	Spring	64	138	83	34	31	39	89	72	2	N. 15 57 E.	.24½	N. 15 W.	.03	184
	Summer	55	127	51	13	24	35	102	130	15	N. 21 1 W.	.35	N. 59½ W.	.23	184
	Autumn	49	140	105	40	28	42	80	57	4	N. 39 1 E.	.24	S. 76 E.	.08	182
	Winter	70	119	67	90	59	40	35	54	4	N. 69 56 E.	.22½	S. 46 E.	.19	180
	The year	238	524	306	177	142	156	306	313	25	N. 19 56 E.	.22			730

(Nos. 371 to 375(*a*).) **Central and Eastern Asia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
371. Fort No. 1. 1857.	January	20	19	15	4	3	1	4	2	15	....	...	....	...	31
	February	40	1	1	5	5	12	9	2	9	....	...	....	...	28
	March	17	11	19	6	3	2	18	8	9	....	...	....	...	31
	April	32	22	4	4	4	3	9	5	3	....	...	....	...	30
	May	13	14	10	0	8	5	8	6	29	....	...	....	...	31
	June	16	8	8	2	7	1	29	6	13	....	...	....	...	30
	July	25	9	3	1	3	0	32	9	11	....	...	....	...	31
	August	36	6	16	1	1	2	19	5	7	....	...	....	...	31
	September	18	3	16	1	10	2	17	6	17	....	...	....	...	30
	October	18	7	3	4	13	16	14	1	15	....	...	....	...	31
	November	23	7	12	4	20	7	4	0	13	....	...	....	...	30
	December	9	8	19	3	6	23	11	5	9	....	...	....	...	31
	Spring	62	47	33	10	15	10	35	19	41	N. 12° 37′ E.	.30	....	...	92
	Summer	77	23	77	4	11	3	80	20	31	N. 28 45 W.	.38	....	...	92
	Autumn	59	17	31	9	43	25	35	7	45	N. 42 44 W.	.04½	....	...	91
	Winter	69	28	35	12	14	36	24	9	33	N. 10 44 E.	.16	....	...	90
	The year	267	115	126	35	83	74	174	55	150	N. 8 18 W.	.21	....	...	365
372. Fort Perowski.	January	18	9	11	17	1	10	13	12	2	....	...	....	...	31
	February	20	4	12	14	7	11	9	5	2	....	...	....	...	28
	March	27	13	10	3	4	8	20	7	1	....	...	....	...	31
	April	35	6	6	1	7	11	11	6	7	....	...	....	...	30
	May	27	2	9	4	14	6	24	4	3	....	...	....	...	31
	June	20	1	8	3	9	2	0	44	3	....	...	....	...	30
	July	17	1	14	6	10	4	36	5	0	....	...	....	...	31
	August	21	1	8	0	15	8	32	8	0	....	...	....	...	31
	September	26	0	8	2	12	1	38	2	1	....	...	....	...	30
	October	25	4	6	6	15	1	29	7	0	....	...	....	...	31
	November	9	4	22	7	24	10	14	0	0	....	...	....	...	30
	December	25	13	8	8	2	12	2	17	6	....	...	....	...	31
	Spring	89	21	25	8	25	25	55	12	11	N. 30 8 W.	.28	....	...	92
	Summer	58	3	30	9	34	14	68	57	3	N. 69 17 W.	.31	....	...	92
	Autumn	60	8	36	15	51	12	81	9	1	N. 87 28 W.	.16	....	...	91
	Winter	63	26	31	39	10	33	24	34	10	N. 7 9 E.	.17	....	...	90
	The year	270	58	122	71	120	84	228	117	25	N. 43 42 W.	.21	....	...	365
373. Valley of the Sir Daria.[1]	Spring	373	538	376	198	100	122	345	151	186	N. 33 52 E.	.27	N. 70½° E.	.09	92
	Summer	435	345	256	93	104	105	611	405	123	N. 29 22 W.	.33½	N. 68 W.	.25	92
	Autumn	292	639	343	125	209	150	368	162	165	N. 32 56 E.	.23	N. 87½ E.	.06	91
	Winter	307	436	344	352	206	191	236	208	157	N. 65 46 E.	.17	S. 35 E.	.15	90
	The year	1407	1958	1319	768	619	568	1560	926	631	N. 20 45 E.	.20½			365
374. Urga.	January	3	10	5	0	3	0	16	7	22					
	February	1	14	34	0	1	0	28	6	61					
	March	12	16	22	1	0	4	31	21	59					
	April	11	8	18	2	1	3	35	36	51					
	May	11	6	18	2	0	2	22	46	40					
	June	19	10	34	4	1	1	13	23	42					
	July	12	15	11	2	0	5	19	19	49					
	August	21	23	13	3	2	3	17	36	35					
	September	17	10	21	6	1	10	21	24	52					
	October	1	7	14	1	2	2	16	13	28					
	November	5	13	24	5	2	4	8	9	17					
	December	7	16	13	5	1	4	33	27	76					
	Spring	34	30	58	5	1	9	88	103	150	N. 35 47 W.	.30	N. 70½ W.	.11	
	Summer	52	48	58	9	3	9	49	78	126	N. 8 26 W.	.29½	N. 19 E.	.08	
	Autumn	23	30	59	12	5	16	45	46	97	N. 0 9 W.	.15½	S. 53½ E.	.08½	
	Winter	11	40	52	5	5	4	77	40	159	N. 23 23 W.	.15½	S. 7 E.	.06½	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 18 41 W.	.22	....	...	669
	M'n force[3]	1.83	1.59	1.83	1.66	1.35	1.65	1.72	1.86						
374(*a*). Urga.	See Addendum at the end of this Zone.														
375(*a*). Aniva Bay.	See Addendum.														

[1] Nos. 369 to 372 combined, using only one-eighth of the numbers for Fort Aralskoe (No. 369), in order to give them only their proper weight.

[2] Computed from the resultants for the seasons.

[3] Expressed in numbers from 1 to 5 inclusive.

(Nos. 375 to 379.) **Pacific Ocean,** west of longitude 180°.

Computed from observations for an aggregate period of 1507 days, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
375. Long. 130° to 140° E.	Winter	1	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N. 22° 30′ E.	.98	3
376. Long. 135° to 145° E.	Summer	26	0	45	21	28	23	41	30	50	24	28	12	6	1	3	5	18	S. 44 46 E.	.35	120
377. Long. 135° to 150° E.	Spring	4	3	25	16	25	12	27	15	31	20	19	12	19	2	10	10	11	S. 28 0 E.	.25	87
378. Long. 140° to 150° E.	Autumn	37	22	38	20	120	50	122	56	152	37	97	32	84	58	87	25	37	S. 1 38 E.	.21	358
379. Long. 145° to 150° E.	Summer	73	39	93	77	136	33	144	41	173	68	94	30	45	18	42	27	65	S. 46 59 E.	.25	399

Addendum to Zone No. 9.

Lougan 21 years, 1838–57, calculated by Kämtz, Repertorium für Meteorologie, v. ii, p. 235.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.		
364(*a*). Lougan, number of winds in 1000.	January	55	169	255	84	79	127	177	55	...	S. 54° 0′ .E	.10
	February	53	85	218	112	94	79	208	49	...	S. 31 0 E.	.07½
	March	56	142	236	67	104	112	221	65	...	S. 51 0 E.	.08
	April	86	121	258	82	114	97	192	50	...	S. 70 0 E.	.14
	May	50	127	292	89	110	117	159	66	...	S. 53 0 E..	.07½
	June	115	96	136	54	73	119	311	96	...	N. 74 0 W.	.10½
	July	95	127	190	57	65	97	247	122	...	N. 51 0 W	.16½
	August	121	159	224	75	61	63	205	92	...	N. 20 0 E.	.10½
	September	84	92	304	84	62	111	191	72	...	N. 83 0 E.	.14½
	October	55	117	283	64	81	109	222	69	...	S. 64 0 E.	.09
	November	37	171	249	74	110	117	186	56	...	S. 31 0 E.	.05
	December	84	153	204	56	76	164	238	50	...	S. 58 0 E.	.07½
	The year	52	142	205	113	58	155	185	90	...	S. 75 0 E.	.05½
364(*b*). Steppes of S. Russia,[1] number of winds in 1000.	January	94	133	211	150	87	100	114	111	...	N. 89 5 E.	.15
	February	83	114	193	144	122	114	122	108	...	S. 56 15 E.	.11½
	March	81	116	196	151	115	127	116	98	...	S. 54 10 E.	.13½
	April	84	106	205	164	108	95	135	103	...	S. 71 53 E.	.12½
	May	92	103	175	123	124	114	146	123	...	S. 28 50 E.	.04½
	June	103	93	133	96	108	117	197	153	...	N. 81 25 W.	.12½
	July	108	101	140	100	95	110	199	147	...	N. 67 59 W.	.10½
	August	124	121	198	115	92	96	127	127	...	N. 54 3 E.	.10
	September	120	128	191	137	75	96	133	120	...	N. 59 2 E.	.11
	October	89	94	190	142	120	111	139	115	...	S. 43 4 E.	.07
	November	84	104	187	172	119	127	115	93	...	S. 45 54 E.	.15½
	December	88	108	176	130	111	132	141	114	...	S. 29 45 E.	.06
	The year	92	123	166	146	103	112	139	119	...	S. 67 24 E.	.06

[1] Means of Lougan, Catheronoslav, Orel, Charkof, Taganrog, Simpheropol, Samarskaja-Ferma, Krutez, Novo-Petrovsk, Uralsk, Nijni-Tschirsk, Orenburg, Woltschansk, Poltava, Odessa, Orlov, Kischinef, calculated by Kämtz in Repertorium f. Meteorologie, v. ii, p. 293.

Addendum to Zone No. 9.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.								
		North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.
368(*a*). Ft. Uralsk, 5 years, 1865–68, and 1871.	January	69	31	80	25	95	29	102	29	6
	February	77	57	43	28	76	28	73	32	9
	March	104	45	86	21	45	24	82	50	13
	April	68	47	93	32	82	35	74	49	3
	May	66	40	93	21	84	30	108	35	3
	June	67	47	63	41	49	47	92	49	17
	July	100	23	86	19	33	27	84	83	10
	August	103	35	59	26	44	36	95	61	6
	September	65	31	61	27	75	30	108	47	11
	October	63	25	94	27	74	33	86	50	8
	November	75	29	118	30	65	31	88	22	6
	December	74	22	53	37	90	33	121	35	0
	Spring	238	132	272	74	211	89	299	134	19
	Summer	270	105	208	86	126	100	271	193	33
	Autumn	203	85	273	84	214	94	282	119	25
	Winter	220	110	176	90	261	90	276	96	15
	The year	931	432	929	334	812	373	1058	542	92

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Ratio of N. to S.	Ratio of E. to W.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
361(*a*). Charkov. 1844–1848	Spring	6.4	18.7	51	46	12.8	24.5	37.5	56	252.9		
	Summer	8.2	26	36	31.7	9.2	19	44.5	74.7	249.3		
	Autumn	11.4	22.9	49	49	9.2	23.5	37	47.3	249.3		
	Winter	6	16.4	51	47.3	13.8	28	34	51	247.5		
	The year	32	84	187	174	45	97	153	229	1000		
1852–1864	Spring	13.3	12	55.5	22.7	23.4	24.4	53	16.4	220.7		
	Summer	37.2	16.4	51	13.3	26.6	30.6	88.6	28.3	292		
	Autumn	27.5	18	72	18.4	26	26	63	26	276.9		
	Winter	10	12.6	65.5	12.6	22	20	53.4	13.3	210.4		
	The year	88	59	244	67	98	101	84	...	1000		
See foot of page 255.	January	35	55	231	120	60	146	183	170	...	1 : 1.7	1 : 0.8
	February	29	70	222	178	67	133	178	123	...	1 : 2.31	1 : 0.8
	March	48	64	291	171	69	84	159	114	...	1 : 1.5	1 : 0.55
	April	34	66	169	147	86	146	200	152	...	1 : 2.5	1 : 1.18
	May	40	96	193	130	90	110	180	161	...	1 : 2.25	1 : 0.9
	June	54	56	125	86	80	130	245	224	...	1 : 1.5	1 : 2.0
	July	71	58	139	82	58	118	274	200	...	1 : 0.81	1 : 2.0
	August	95	123	190	115	50	78	171	178	...	1 : 0.5	1 : 0.9
	September	87	105	182	111	61	104	191	159	...	1 : 0.7	1 : 1.05
	October	56	70	203	140	85	117	211	118	...	1 : 1.5	1 : 1.04
	November	54	57	237	163	70	141	155	123	...	1 : 1.3	1 : 0.65
	December	28	97	238	140	84	133	140	140	...	1 : 3.0	1 : 0.6
	Spring	40	73	218	149	82	112	180	146	...	1 : 2.0	1 : 0.8
	Summer	73	80	151	95	61	109	230	201	...	1 : 0.83	1 : 1.5
	Autumn	65	78	206	139	71	120	185	136	...	1 : 1.1	1 : 0.9
	Winter	28	75	231	146	71	137	166	146	...	1 : 2.53	1 : 0.72
	The year	53	76.5	200	131	71	119	191.6	158	...	1 : 1.34	1 : 0.95
366(*a*). Port of Astrachan, 1856–1866.	January	5.2	10.3	19.9	16.6	1.9	4.9	13.7	11.9	8.5		
	February	3.9	16.2	18.0	10.9	2.3	5.1	8.0	12.0	5.5		
	March	3.0	15.8	22.7	22.1	3.5	3.5	7.8	6.3	7.4		
	April	3.7	10.0	19.9	15.1	4.0	6.2	14.0	7.8	9.7		
	May	6.4	8.6	14.6	17.1	3.0	7.0	9.4	12.8	13.5		
	June	6.5	10.1	15.0	10.1	4.0	6.6	13.8	9.9	14.5		
	July	5.3	8.5	17.0	12.7	4.1	8.8	12.6	9.9	18.9		
	August	7.9	11.1	15.6	12.0	3.1	8.0	10.1	8.6	15.0		
	September	5.6	10.9	16.6	12.4	2.3	4.1	8.2	9.0	16.7		
	October	7.2	11.2	15.5	7.4	2.8	6.9	11.7	10.4	13.0		
	November	5.2	17.0	19.6	15.1	3.8	4.1	9.0	9.5	7.0		
	December	3.8	13.8	17.0	11.5	2.7	8.3	15.3	12.5	10.0		
	The year	63.7	143.5	211.4	16.3	37.5	73.5	133.6	120.6	139.7		

Addendum to Zone No. 9.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Ratio of N. to S.	Ratio of E. to W.	Direction of resultant.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
375(*a*). Aniva Bay, 1853–1854.	October	11.46	7.29	15.63	13.54	10.42	15.63	22.92	3.13	...	1 : 1.81	1 : 1.15	
	November	8.33	17.65	8.33	5.88	4.90	3.92	28.43	22.55	...	1 : 0.30	1 : 1.72	
	December	6.16	13.70	6.85	0.00	2.74	10.27	36.99	23.29	...	1 : 0.30	1 : 3.43	
	January	7.52	40.60	10.53	3.01	1.13	12.03	11.65	13.53	...	1 : 0.26	1 : 0.69	
	February	11.54	48.72	6.41	0.00	0.00	0.00	0.00	33.33	...	93.59 : 0	1 : 0.60	
	March	10.43	35.65	0.00	2.61	11.74	13.48	13.91	12.17	...	1 : 0.48	1 : 1.03	
	April	8.55	17.09	8.55	2.56	34.19	12.82	9.40	6.84	...	1 : 1.53	1 : 1.03	
	May	4.72	16.54	5.51	3.94	33.86	17.32	11.81	6.30	...	1 : 2.00	1 : 1.36	
	Winter	8.41	34.34	7.93	1.00	1.29	7.43	16.21	23.38	...	1 : 0.15	1 : 1 09	N. 7° W. .42
	Spring	7.90	23.09	4.69	3.04	26.60	14.54	11.71	8.44	...	1 : 1.12	1 : 1.13	S. 10 W. .28

Place of observation.	Time of the year.	Relative Prevalence and Force of Winds from the Different Points of the Compass.																
		North.		N. E.		East.		S. E.		South.		S. W.		West.		N. W.		Calm or variable.
		No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	
374(*a*). Urga.	1870.																	
	January	3	2.0	11	2.7	6	2.6	0	0	3	2.0	0	0	20	3.2	12	3.0	32
	February	1	2.0	12	3.3	8	3.7	0	0	0	0	0	0	21	3.4	6	3.0	31
	March	9	3.6	14	3.6	5	4.0	0	0	0	0	1	4.0	12	3.8	11	3.1	33
	April	8	3.5	8	2.7	10	3.4	0	0	1	4.0	1	4.0	15	3.7	15	3.6	26
	May	8	3.7	4	3.0	16	3.0	0	0	0	0	0	0	12	2.8	23	3.2	24
	June	13	3.7	5	4.4	27	3.0	0	0	0	0	0	0	6	3.7	11	3.1	23
	July	6	3.0	12	3.0	8	2.7	0	0	0	0	2	4.0	13	4.2	12	2.7	37
	August	9	4.0	18	3.4	5	2.4	1	4.0	1	4.0	1	4.0	9	4.4	27	3.7	20
	September	11	4.5	8	2.2	8	3.5	1	6.0	0	0	6	3.3	14	3.7	15	3.6	25
	October	1	6.0	7	2.9	14	3.1	1	2.0	3	3.3	2	3.0	16	3.7	14	4.3	33
	November	6	2.7	13	3.4	25	4.2	5	2.4	2	2.0	3	2.0	8	3.7	10	4.2	17
	December	1	2.0	2	4.0	11	4.0	3	2.7	1	2.0	1	2.0	12	4.7	16	5.2	44
	The year	76	4.1	114	3.2	143	3.3	11	2.9	11	2.7	17	3.2	158	3.8	172	3.6	345
	1871.																	
	January	3	3.3	1	2.0	14	4.0	1	4.0	0	0	0	0	6	2.7	2	4.0	64
	February	1	2.0	2	3.0	28	3.8	0	0	1	2.0	0	0	8	3.5	2	5.0	40
	March	3	5.3	2	2.0	17	5.2	1	6.0	0	0	3	4.0	19	2.7	10	4.0	28
	April	4	4.0	0	0	8	3.5	2	2.0	0	0	1	4.0	20	4.1	24	4.4	28
	May	5	3.2	2	1.5	5	2.8	2	1.5	0	0	2	2.5	18	2.2	28	2.1	21
	June	10	1.3	5	1.2	11	1.8	4	1.7	1	1.0	1	1.0	9	1.2	15	1.7	27
	July	10	2.3	7	3.0	7	2.0	4	1.7	0	0	6	1.5	10	1.6	8	1.5	26
	August	12	1.7	10	1.4	10	1.4	2	1.0	1	2.0	2	1.0	9	1.3	13	1.6	23
	September	8	1.9	2	3.0	14	1.5	7	2.3	1	1.0	3	1.3	9	1.3	13	1.9	25
	October	6	1.3	1	1.0	13	4.5	0	0	0	0	3	1.0	11	1.5	16	1.6	29
	November	5	1.0	5	1.6	8	1.2	4	1.0	1	1.0	3	1.0	12	1.6	21	2.1	27
	December	6	1.0	13	1.8	19	2.0	2	1.0	1	1.0	1	2.0	11	1.5	9	1.6	27
	The year	73	2.1	50	1.9	154	2.7	29	1.9	6	1.3	25	1.8	142	2.3	161	2.3	365

Place of observation.	Time of the year.	Resultant.		Monsoon influences.	
		Direction.	Ratio.	Direction.	Force.
361(*a*). Charkov, 1852–1864. (Continued from page 254.)	Spring	S. 4° 26′ W.	.05	S. 26½° E.	.04
	Summer	N. 79 9 W.	.10	N. 66½ W.	.08
	Autumn	N. 59 0 W.	.00½	N. 47 E.	.02½
	Winter	S. 27 25 E.	.03	S. 70 E.	.04
	The year	S. 63 35 W.	.03		

Addendum to Zone No. 9.—*Continued.*

58(*a*). Observations at Winnipeg, Manitoba, by James Stewart, from Jan. 1869, to March, 1873.

	Time of the year.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calms.	Total number of observations.
Number of observations.	January	48	11	10	34	61	13	12	60	30	279
	February	53	9	9	35	46	17	8	48	31	256
	March	75	14	11	34	64	23	26	64	59	370
	April	60	26	6	14	47	18	13	18	68	270
	May	69	39	25	40	80	13	29	32	45	372
	June	46	24	9	26	52	11	26	25	51	270
	July	30	14	9	28	62	14	46	33	43	279
	August	7	10	13	7	12	3	7	7	27	93
	September	36	6	4	18	38	10	27	21	20	180
	October	56	17	14	29	62	19	15	44	23	279
	November	38	15	11	16	32	12	15	23	18	180
	December	50	4	6	13	21	28	13	32	19	186
	Spring	204	79	42	88	191	54	68	114	172	1012
	Summer	83	48	31	61	126	28	79	65	121	642
	Autumn	130	38	29	63	132	41	57	88	61	639
	Winter	151	24	25	82	128	58	33	140	80	721
	The year	568	189	127	294	577	181	237	407	433	3014
Percentage of winds.	Spring	20	7	4	9	19	5	7	11	17	
	Summer	13	7	5	10	20	4	12	10	19	
	Autumn	20	6	5	10	21	6	9	14	9	
	Winter	21	3	3	11	18	8	5	20	11	
	The year	19	6	4	10	19	6	8	13	14	

Observations on the Atlantic Ocean, calculated by the Meteorological Institute of the Netherlands, under Capt. Cornelissen's directions.

Between 30° and 15° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.	East of 15° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.
92(*a*).	Spring	6	50	25	16	3	94(*a*).	Spring	20	24	26	22	4
Lat. 49°–50° N.	Summer	35	35	17	10	3	Lat. 49°–50° N.	Summer	16	15	35	30	14
(No. of obs.	Autumn	21	56	11	10	2	(No. of obs.	Autumn	17	29	27	24	2
771.)	Winter	15	26	50	6	3	14,574.)	Winter	13	26	36	22	2
92(*b*).	Spring	17	40	26	13	4	94(*b*).	Spring	23	24	24	25	4
Lat. 48°–49° N.	Summer	12	18	33	33	3	Lat. 48°–49° N.	Summer	19	12	31	34	5
(No. of obs.	Autumn	16	46	18	16	3	(No. of obs.	Autumn	21	25	25	25	3
1732.)	Winter	24	31	28	10	17	13,926.)	Winter	19	21	34	23	3
92(*c*).	Spring	13	33	30	22	3	94(*c*).	Spring	22	20	28	26	3
Lat. 47°–48° N.	Summer	15	17	30	34	3	Lat. 47°–48° N.	Summer	19	11	29	37	4
(No. of obs.	Autumn	13	30	31	21	5	(No. of obs.	Autumn	20	22	31	25	3
3065.)	Winter	21	28	30	19	2	10,153.)	Winter	18	19	24	27	3
92(*d*).	Spring	16	26	32	23	3	94(*d*).	Spring	24	21	27	24	4
Lat. 46°–47° N.	Summer	16	16	32	33	4	Lat. 46°–47° N.	Summer	21	12	28	34	15
(No. of obs.	Autumn	17	30	27	24	3	(No. of obs.	Autumn	22	22	24	27	4
4653.)	Winter	17	23	32	24	4	7635.)	Winter	20	19	32	26	3
92(*e*).	Spring	19	22	28	27	3	94(*e*).	Spring	23	21	28	25	3
Lat. 45°–46° N.	Summer	20	16	32	30	3	Lat. 45°–46° N.	Summer	27	11	26	31	4
(No. of obs.	Autumn	18	26	26	26	4	(No. of obs.	Autumn	23	20	25	27	5
5386.)	Winter	16	22	35	27	9	61,191.)	Winter	19	17	33	28	3

		N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calm.
375(*b*). Murairevsky, Poste, Isle of Saghalin. Number of observations.	Spring	19	9	24	17	2	80	16	6	100
	Summer	12	27	63	21	3	27	19	3	87
	Autumn	4	14	15	18	6	27	45	17	104
	Winter	10	4	31	12	5	29	28	20	10
	The year	45	54	133	68	16	163	108	46	301

ZONE No. 10.

LATITUDE 40° TO 45° NORTH.

The data for the study of the winds of this zone consist of observations made at over a thousand permanent stations on land, for an aggregate period of over 4414 years; on the Atlantic and Pacific Oceans for over 24 years, and some reported to the British Board of Trade from the Black Sea. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	3319 days = 9 years 1 month.
America west of the Mississippi River,	161	553 years, besides general observations by Nicollet.
America east of the Mississippi River,	795	over 3491 years.
Atlantic Ocean,	....	5467 days = nearly 15 years
Europe,	50	over 343½ years.
Black Sea,	....	?
Asia,	13	about 26 years.

(Nos. 1 to 10.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of 1670 days, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observations.	Time of the year.	North.	N. N. E.	N. E.	E. N. E	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																			
1. Long. 160°–165° W.	Spring	10	26	4	14	3	3	1	11	0	36	13	51	14	46	25	25	5	N. 77° 14′ W.	.42	96
	Summer	0	4	1	1	0	1	3	11	22	13	11	4	0	3	5	8	2	S. 21 29 W.	.47	30
	Autumn	0	31	4	4	8	3	2	30	12	17	8	23	8	10	7	6	0	S. 32 15 W.	.17	58
2. Long: 155°–160° W.	Spring	8	24	0	20	7	27	7	20	16	71	28	64	48	111	42	55	19	N. 89 37 W.	.31	189
	Summer	0	9	3	32	3	26	3	0	17	26	10	6	0	12	13	29	10	S. 73 16 E.	.04	66
	Autumn	4	10	0	1	0	13	5	15	16	33	3	9	0	6	3	7	5	S. 8 24 W.	.42	40
3. Long. 150°–155° W.	Spring	7	6	4	11	6	15	11	54	34	73	11	39	40	63	26	26	7	S. 53 1 W.	.39	144
	Summer	11	37	13	14	5	15	8	14	4	38	13	31	11	30	27	25	5	N. 61 40 W.	.20	100
	Autumn	1	21	11	5	4	10	5	20	12	52	4	13	12	15	11	4	8	S. 29 19 W.	.24	69
4. Long. 145°–150° W.	Spring	0	11	0	2	9	8	4	25	13	27	3	25	2	8	12	11	6	S. 26 22 W.	.31	55
	Summer	6	44	19	8	3	14	5	24	9	24	24	45	12	57	15	50	9	N. 64 41 W.	.29	123
	Autumn	1	11	0	6	0	7	5	21	23	57	16	36	8	23	4	14	7	S. 40 43 W.	.49	80
5. Long. 140°–145° W.	Spring	0	1	0	0	0	1	5	20	0	15	5	7	2	10	3	9	8	S. 36 20 W.	.39	29
	Summer	12	9	6	13	7	8	3	14	1	12	6	41	6	41	7	36	12	N. 63 50 W.	.32	78
	Autumn	5	37	6	3	0	18	3	5	4	19	41	51	22	34	7	30	11	N. 86 38 W.	.38	99
6. Long. 120°–165° W.	Winter	3	11	0	13	1	1	0	0	7	22	4	10	2	7	4	8	0	S. 78 46 W.	.18	31
7. Long. 135°–140° W.	Summer	8	26	7	5	0	11	0	7	2	22	7	24	6	21	12	22	2	N. 57 50 W.	.29	61
	Au'umn	5	8	0	3	0	2	4	0	0	16	13	21	3	14	1	18	0	N. 89 14 W.	.44	36
8. Long. 130°–140° W.	Spring	7	13	0	1	4	16	0	8	3	5	4	13	0	13	5	4	0	N. 42 29 W.	.09	32
9. Long. 130°–135° W.	Summer	18	26	10	7	2	6	5	7	4	16	5	16	7	24	11	35	11	N. 31 53 W.	.34	70
	Autumn	1	2	0	1	0	2	0	3	4	17	13	26	0	10	8	16	0	S. 75 8 W.	.56	34
10. Long. 120°–130° W.	Spring	4	3	2	4	0	0	0	0	10	14	2	7	3	4	1	40	1	N. 53 36 W.	.39	32
	Summer	25	29	2	0	0	0	0	15	5	27	1	1	0	7	3	84	6	N. 23 0 W.	.43	68
	Autumn	10	42	3	5	0	2	1	5	3	3	3	9	0	20	7	37	0	N. 14 55 W.	.56	50

(Nos. 11 to 21.) **California,** north of latitude 40°.

Observed at the following places, viz. :—

Camp Bidwell, by Post Surgeons, from September, 1866, to December, 1869, inclusive.

Camp Gaston, by Post Surgeons, for an aggregate period of 7½ years, in the years 1860 to 1869 inclusive.

Crescent City, by Robert B. Randall, from July, 1859, to January, 1860, inclusive.

Fort Crook, by Post Surgeons, for an aggregate period of 8⅓ years, in the years 1860 to 1869 inclusive.

Fort Humboldt, by Post Surgeons, for an aggregate period of 11 years, in the years 1854 to 1866 inclusive.

Fort Jones, by Post Surgeons, for an aggregate period of 4½ years, in the years 1853 to 1858 inclusive.

Fort Lincoln, by Post Surgeons, for an aggregate period of 32 months, in the years 1866 to 1869 inclusive.

Fort Reading, by Post Surgeons, for an aggregate period of 40 months, in the years 1852 to 1856 inclusive.

Fort Ter-waw, by Post Surgeons, for an aggregate period of 18 months, in the years 1860 and 1861.

Meadow Valley, by J. H. Whitlock, C. A. Canfield and M. D. Smith, for an aggregate period of 17 months, in the years 1860 and 1861.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
11. Fort Humboldt.	Spring	848	134	71	182	294	205	69	332	564	N. 14° 12′ W.	.23	N. 31° E.	.05	951
	Summer	969	109	18	64	140	256	99	598	674	N. 27 2 W.	.42	N. 29½ W.	.22	1013
	Autumn	878	103	86	179	336	273	123	464	750	N. 29 55 W.	.22½	N. 67 W.	.03	1123
	Winter	405	143	154	446	481	216	70	357	544	S. 26 35 E.	.07½	S. 25 E.	.27	994
	The year[2]	...	...	...	...	...	...	...	...	...	N. 24 15 W.	.20	....	...	4081
12. Fort Lincoln.	Spring	108	76	75	79	112	115	150	113	0	S. 86 35 W.	.15½	N. 3 E.	.11	276
	Summer	62	37	18	28	77	106	162	36	26	S. 73 41 W.	.37½	N. 86 W.	.20	184
	Autumn	57	79	44	86	100	121	181	58	0	S. 57 49 W.	.24	S. 75 W.	.04	242
	Winter	71	75	97	176	126	136	83	49	0	S. 17 54 E.	.24	S. 64½ E.	.26	271
	The year[2]	...	...	...	...	...	...	...	...	...	S. 53 36 W.	.20	....	...	973
13. Fort Ter-Waw.	Spring	0	59	134	60	0	102	216	164	0	N. 76 57 W.	.26	S. 23½ W.	.02½	245
	Summer	0	47	76	42	3	127	156	103	0	S. 84 47 W.	.32½	S. 36 W.	.14	184
	Autumn	0	59	85	37	0	98	161	172	27	N. 71 11 W.	.33	N. 71¼ W.	.07	213
	Winter	0	122	128	37	0	56	150	146	0	N. 22 58 W.	.21	N. 55½ E.	.02	212
	The year[2]	...	...	...	...	...	...	...	...	...	N. 71 9 W.	.26	....	...	854
14. Camp Gaston.	Spring	342	229	70	193	115	208	220	547	0	N. 38 4 W.	.32½	N. 5 W.	.06	644
	Summer	488	429	48	71	28	31	78	527	49	N. 3 45 W.	.61	N. 21 E.	.44	583
	Autumn	370	217	88	228	121	296	327	674	136	N. 57 33 W.	.29½	S. 51½ W.	.07	819
	Winter	121	121	48	285	337	564	391	327	65	S. 53 8 W.	.37	S. 13 W.	.43	753
	The year[2]	...	...	...	...	...	...	...	...	...	N. 44 25 W.	.28	....	...	2799
15. Fort Jones.	Spring	169	74	54	95	344	154	228	121	0	S. 49 25 W.	.28	S. 26½ W.	.08½	460
	Summer	181	99	32	65	157	113	257	98	24	N. 81 45 W.	.26	N. 29 W.	.17	337
	Autumn	160	119	26	91	247	154	153	98	0	S. 55 45 W.	.18	N. 80 E.	.03	394
	Winter	209	78	59	61	405	136	78	105	1	S. 23 52 W.	.20	S. 51 E.	.12	420
	The year[2]	...	...	...	...	...	...	...	...	...	S. 58 42 W.	.20	....	...	1611
16. North-western California[1]	Spring	1467	572	404	609	865	784	883	1277	564	N. 49 59 W.	.19	N. 22½ E.	.02	2576
	Summer	1702	721	192	272	460	645	762	1386	833	N. 32 3 W.	.35	N. 10 W.	.20	2363
	Autumn	1475	580	329	621	893	948	957	1524	1008	N. 57 49 W.	.22	N. 72 W.	.04	2882
	Winter	848	548	486	1007	1403	1114	772	1004	663	S. 35 33 W.	.15	S. 16 E.	.23	2712
	The year[2]	...	...	...	...	...	...	...	...	...	N. 55 27 W.	.18½	....	...	10533
17. Fort Reading.	Spring	175	18	21	39	204	30	17	37	0	S. 4 31 W.	.07	S. 28 E.	.11	245
	Summer	168	21	5	51	204	70	35	77	3	S. 57 48 W.	.15½	S. 33½ W.	.13½	307
	Autumn	302	77	13	41	258	58	33	81	0	N. 22 8 W.	.11	N. 13 E.	.07½	364
	Winter	280	28	11	17	197	20	33	40	0	N. 17 16 W.	.17½	N. 2 E.	.14	302
	The year[2]	...	...	...	...	...	...	...	...	...	N. 63 51 W.	.06	....	...	1218

[1] Camp Gaston, Crescent City, and Forts Humboldt, Jones, Lincoln and Ter-waw.
[2] Computed from the resultants for the seasons.

(Nos. 18 to 21.) **California.**—*Continued.*

Place of observations.	Time of the year.	Elative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
18. Fort Crook.	January	99	96	48	80	53	172	71	159	128					
	February	82	67	36	81	28	168	113	174	83					
	March	127	58	22	94	52	205	230	223	88					
	April	126	56	23	56	24	206	239	251	76					
	May	63	61	12	38	5	218	157	206	30					
	June	46	45	23	38	24	163	204	260	45					
	July	27	41	13	17	28	140	259	267	68					
	August	21	69	14	11	44	148	221	229	68					
	September	30	46	13	35	19	167	208	268	65					
	October	43	55	23	35	7	137	266	235	67					
	November	95	72	22	62	24	178	175	213	65					
	December	56	72	2	84	8	161	121	208	121					
	Spring	316	175	57	188	81	629	626	680	194	N. 78° 3′ W.	.43	S. 47° W.	.01	
	Summer	94	155	50	66	96	451	684	756	181	N. 78 16 W.	.54	N. 83 W.	.11	
	Autumn	168	173	58	132	50	482	649	716	197	N. 75 40 W.	.48	N. 65 W.	.05½	
	Winter	237	235	86	245	89	501	305	541	332	N. 74 39 W.	.25	S. 80½ E.	.17½	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 76 56 W.	.42	....	...	3044
19. Camp Bidwell.	Spring	118	71	123	88	190	143	121	67	0	S. 11 21 W.	.15½	S. 78½ E.	.08	307
	Summer	25	46	102	98	189	188	131	52	0	S. 18 4 W.	.37½	S. 2½ W.	.22	276
	Autumn	130	77	75	101	194	194	200	136	75	S. 62 19 W.	.22	N. 70 W.	.09½	394
	Winter	289	86	103	83	187	151	123	117	40	N. 48 19 W.	.10	N. 9 E.	.21	393
	The year[2]	...	...	...	...	...	...	...	...	...	S. 37 40 W.	.17	....	...	1370
20. Meadow Valley.	Spring	73	13	0	38	61	127	49	37	38	S. 61 43 W.	.33½	N. 73 E.	.08	
	Summer	5	14	3	15	64	202	62	20	32	S. 47 30 W.	.67	S 24 W.	.29	
	Autumn	5	2	0	7	16	85	53	14	90	S. 60 59 W.	.49	S. 44½ W.	.07	
	Winter	108	24	10	15	29	89	55	27	0	N. 67 20 W.	.30	N. 18 E.	.31	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 63 56 W.	.42	....	...	517
21. N. E. California.[1]	Spring	191	84	123	126	251	270	170	104	38	S. 38 48 W.	.19½	S. 87 E.	.05½	
	Summer	30	60	105	113	253	390	193	72	32	S. 29 50 W.	.45	S. 11 W.	.25	
	Autumn	135	79	75	108	210	279	253	150	165	S. 61 10 W.	.27½	N. 77½ W.		
	Winter	397	110	113	98	216	240	178	144	40	N. 57 19 W.	.15	N. 13 E.	.06	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 50 5 W.	.23	....	...	1887

[1] Camp Bidwell and Meadow Valley. [2] Computed from the resultants for the seasons.

(Nos. 22 to 36.) **Oregon**, south of latitude 45°.

Observed at the following places, viz. :—

Albany, by S. M. W. Hindman, for an aggregate period of 23 months, in the years 1865 to 1868 inclusive.

Auburn, by R. B. Ironside, for an aggregate period of 5 months, in the years 1864 and 1865.

Block House, by Post Surgeons, for an aggregate period of 4¼ years, in the years 1858 to 1863 inclusive.

Camp Harney, by Post Surgeons, for an aggregate period of 2¼ years, in the years 1860, 1868 and 1869.

Camp Logan, by Post Surgeons, for an aggregate period of 17 months, in the years 1868 and 1869.

Camp Three Forks, by Post Surgeons, during the years 1868 and 1869.

Camp Warner, by Post Surgeons, for an aggregate period of 22 months, in the years 1868 and 1869.

Camp Watson, by Post Surgeons, for an aggregate period of 2 years, in the years 1867, 1868 and 1869.

Corvallis, by A. D. Barnard, for an aggregate period of 22 months, in the years 1866, 1867 and 1868.

Fort Hoskins, by Post Surgeons, for an aggregate period of 8 years, in the years 1856 to 1865 inclusive.

(Nos. 22 to 29.) **Oregon.**—*Continued.*

Fort Klamath, by Post Surgeons, from December, 1863, to April, 1866, inclusive.

Fort Lane, by Post Surgeons, for an aggregate period of 11 months, in the years 1855 and 1856.

Fort Orford, by Post Surgeons, for an aggregate period of 2½ years, in the years 1852 to 1856 inclusive.

Fort Umpqua, by Post Surgeons, from August, 1856, to May, 1862, inclusive.

Salem, by Thomas H. Crawford and P. L. Willis, for an aggregate period of 3 months, in the years 1861, 1863 and 1864.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
22. Fort Orford.	Spring	158	13	4	256	10	13	8	138	25	N. 50° 54′ E.	.16	S. 88° E.	.14	184
	Summer	87	0	0	169	32	1	6	458	54	N. 39 13 W.	.42	N. 49 W.	.28½	247
	Autumn	98	24	5	324	68	40	4	362	34	N. 39 13 W.	.06	S. 19½ W.	.07	273
	Winter	116	13	8	311	47	26	3	188	23	S. 71 50 E.	.12	S. 41½ E.	.19½	212
	The year[3]	...	...	...	...	...	...	...	...	...	N. 9 3 W.	.11	....	...	916
23. Fort Umpqua.	Spring	12	130	127	44	1	647	99	665	21	N. 84 30 W.	.50½	S. 88½ W.	.21½	582
	Summer	0	44	43	6	4	298	22	991	65	N. 59 3 W.	.68	N. 44½ W.	.41½	491
	Autumn	20	231	99	127	23	590	47	454	47	S. 86 37 W.	.26½	S. 22½ E.	.08	546
	Winter	6	302	208	174	23	632	79	231	61	S. 47 56 E.	.25	S. 65 E.	.52½	572
	The year[3]	...	...	...	...	...	...	...	...	...	N. 79 37 W.	.29½	....	...	2191
24. Fort Lane.	Spring	9	34	5	25	2	56	28	93	24	N. 65 29 W.	.35	N. 38 W.	.14½	92
	Summer	22	25	8	12	4	32	26	50	4	N. 51 17 W.	.35	N. 13 W.	.20	61
	Autumn	58	9	4	12	83	12	11	26	61	S. 46 13 W.	.09½	S. 60½ E.	.19	92
	Winter	7	13	4	48	18	68	36	47	32	S. 54 12 W.	.32	S. 7½ W.	.22	91
	The year[3]	...	...	...	...	...	...	...	...	...	N. 82 56 W.	.23	....	...	336
25. South-western Oregon.[1]	Spring	179	177	136	325	13	716	135	896	70	N 76 28 W.	.30½	S. 87½ W.	.05½	858
	Summer	109	69	51	187	40	331	54	1499	123	N. 53 59 W.	.56	N. 39 W.	.33	799
	Autumn	176	264	108	463	174	642	62	842	142	N. 89 36 W.	.17	S. 45½ E.	.10	911
	Winter	129	328	220	533	88	726	118	466	116	S. 24 39 W.	.12	S. 46 E.	.26	875
	The year[3]	...	...	...	...	...	...	...	...	...	N. 73 0 W.	.25½	....	...	3443
26. Fort Hoskins.	Spring	234	154	159	101	202	302	439	415	285	N. 76 10 W.	.27	S. 46 W.	.07	767
	Summer	243	181	78	64	283	288	395	372	304	N. 80 30 W.	.28	S. 43½ W.	.09½	736
	Autumn	334	233	100	58	143	231	332	355	305	N. 47 36 W.	.29	N. 1½ W.	.08	697
	Winter	346	263	126	161	198	249	252	433	220	N. 33 7 W.	.18	N. 73 E.	.12	750
	The year[3]	...	...	...	...	...	...	...	...	...	N. 62 10 W.	.24	....	...	2950
27. Block House.	Spring	31	31	64	122	30	369	264	286	0	S. 77 37 W.	.47½	S. 48 W.	.13	399
	Summer	118	58	30	47	46	211	333	318	36	N. 75 32 W.	.52	N. 44½ W.	.20	399
	Autumn	63	55	85	118	125	221	245	306	57	S. 83 33 W.	.32½	S. 60 E.	.05	425
	Winter	49	194	50	122	51	297	131	175	9	S. 78 57 W.	.18	S. 83 E.	.20	361
	The year[3]	...	...	...	...	...	...	...	...	...	S. 88 17 W.	.36	....	...	1584
28. Western Oregon.[2] Surface wind.	Spring	489	221	255	262	358	794	876	788	294	N. 86 0 W.	.32	S. 54 W.	.07	1449
	Summer	616	271	138	119	379	553	961	761	348	N. 71 35 W.	.37½	N. 61 W.	.11	1382
	Autumn	597	313	221	198	435	546	665	698	417	N. 69 58 W.	.25	N. 59 E.	.03½	1364
	Winter	621	497	221	332	564	664	522	657	277	N. 75 29 W.	.15	S. 75 E.	.12	1454
	The year[3]	...	...	...	...	...	...	...	...	...	N. 75 49 W.	.27	....	...	5649
Motion of clouds.	Spring	24	9	3	7	23	118	192	70	...	S. 84 12 W.	.70	S. 38½ W.	.03	
	Summer	18	6	1	32	12	43	141	67	...	N. 88 37 W.	.60	N. 52½ E.	.11	
	Autumn	15	4	2	5	38	48	169	40	...	S. 82 30 W.	.70	S. 21½ W.	.04	
	Winter	32	8	2	1	32	84	262	42	...	S. 85 8 W.	.74	S. 78½ W.	.06	
	The year[3]	...	...	...	...	...	..	...	...	...	S. 85 43 W.	.68			
2 preceding combined.	Spring	513	230	258	269	381	912	1068	858	294	N. 87 32 W.	.36	S. 54 W.	.07	1449
	Summer	634	277	139	151	391	596	1102	828	348	N. 73 26 W.	.39	N. 53½ W.	.09	1382
	Autumn	612	317	223	203	473	594	834	738	417	N. 74 50 W.	.28	N. 63 E.	.04	1364
	Winter	653	505	223	333	596	748	784	699	277	N. 81 45 W.	.21	S. 74½ E.	.10	1454
	The year[3]	...	...	...	...	...	...	...	...	...	N. 79 17 W.	.31	....	...	5649
29. Fort Klamath.	Spring	40	56	35	48	43	89	210	85	129	S. 89 57 W.	.30	N. 57 W.	.06	245
	Summer	25	35	21	36	53	88	183	55	56	S. 76 16 W.	.40	S. 55 W.	.15	184
	Autumn	61	47	53	35	68	56	152	38	36	S. 84 2 W.	.20	N. 72 E.	.05	182
	Winter	52	96	86	130	38	104	205	90	12	S. 77 0 W.	.11	N. 86½ E.	.14	271
	The year[3]	...	...	...	...	...	...	...	...	...	S. 82 0 W.	.25	....	...	882

[1] Forts Orford, Umpqua and Lane combined.
[2] Albany, Block House, Corvallis, Fort Hoskins and Salem.
[3] Computed from the resultants for the seasons.

(Nos. 30 to 36.) **Oregon.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
30. Camp Warner.	Spring	8	68	10	91	41	171	38	124	1	S. 56° 24′ W.	.27	S. 71° W.	.17½	184
	Summer	16	52	25	88	30	61	45	52	0	S. 1 8 W.	.12½	S. 60 E.	.07	123
	Autumn	9	105	26	135	24	121	31	94	1	S. 12 55 E.	.10½	S. 82½ E.	.08	182
	Winter	21	121	10	116	15	108	45	104	3	N. 68 49 W.	.03½	N. 14 E.	.11	181
	The year[4]	...	...	...	...	...	...	...	...	...	S. 33 6 W.	.11	....	...	670
31. Southern Oregon.[1]	Spring	48	124	45	139	84	260	248	209	130	S. 76 40 W.	.28	S. 88½ W.	.10	429
	Summer	41	87	46	124	83	149	228	107	56	S. 65 25 W.	.25½	S. 54 W.	.08	307
	Autumn	70	152	79	170	92	177	183	132	37	S. 54 56 W.	.10½	S. 89 E.	.08	364
	Winter	73	217	96	246	53	212	250	194	15	S. 83 22 W.	.08½	N. 59 E.	.10	452
	The year[4]	...	...	...	...	...	...	...	...	...	S. 70 27 W.	.18	....	...	1552
32. Camp Watson.	Spring	23	35	38	45	56	146	145	144	10	S. 80 47 W.	.40½	N. 10 W.	.04	214
	Summer	15	22	11	17	6	93	195	193	0	N. 76 56 W.	.67	N. 45 W.	.36	184
	Autumn	9	39	16	21	50	144	139	116	12	S. 79 42 W.	.49	N. 76 W.	.09	182
	Winter	9	20	44	124	85	94	41	32	1	S. 4 39 E.	.43	S. 47 E.	.48	150
	The year[4]	...	...	...	...	...	...	...	...	...	S. 73 54 W.	.39	....	...	730
33. Eastern Oregon.[2]	Spring	39	38	73	55	72	165	374	174	111	S. 85 21 W.	.43	N. 63½ W.	.12	367
	Summer	92	38	189	70	67	139	533	268	119	N. 80 16 W.	.36½	N. 13½ W.	.15	522
	Autumn	69	42	73	89	67	168	432	126	26	S. 82 41 W.	.44	N. 74 W.	.12	364
	Winter	19	22	53	126	85	95	100	42	1	S. 12 30 W.	.33½	S. 46½ E.	.35	180
	The year[4]	...	...	...	...	...	...	...	...	...	S. 74 40 W.	.33½	....	...	1433
34. Camp Harney.	Spring	398	3	18	48	286	9	30	3	...	N. 11 36 E.	.21			
	Summer	280	3	12	25	304	6	12	3	...	S. 29 44 W.	.06			
	Autumn	336	0	0	0	210	0	0	0	...	North.	.23			
	Winter	319	0	0	0	131	0	0	0	...	North.	.42			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 0 55 W.	.17			
35. Camp Three Forks.	Spring	48	104	64	73	46	54	58	76	12	N. 44 49 E.	.10			
	Summer	38	116	30	47	29	89	40	84	30	N. 17 28 W.	.11			
	Autumn	38	139	40	46	11	64	55	84	36	N. 5 58 E.	.21			
	Winter	53	110	82	114	45	48	23	23	25	S. 85 43 E.	.32			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 46 4 E.	.13			
36. South-eastern Oregon.[3]	Spring	446	107	82	121	332	63	88	79	12	N. 25 24 E.	.09½	S. 19½ W.	.04	
	Summer	318	119	42	72	333	95	52	87	30	N. 16 8 W.	.01	S. 27½ W.	.12	
	Autumn	374	139	40	46	221	64	55	84	36	N. 2 45 E.	.22	N. 25 W.	.22	
	Winter	372	110	82	114	176	48	23	23	25	N. 43 37 E.	.25	N. 64 E.	.13	
	The year[4]	...	...	...	...	...	...	...	...	...	N. 23 56 E.	.13½			

[1] Camp Warner and Fort Klamath.
[2] Auburn and Camps Logan and Watson.
[3] Camps Harney and Three Forks combined.
[4] Computed from the resultants for the seasons.

(Nos. 37 to 43.) **Nevada,** north of latitude 40°.

Observed at the following places, viz. :—

Camp Halleck, by Post Surgeons, for an aggregate period of 62 months, in the years 1863 to 1869 inclusive.

Camp McDermit, by Post Surgeons, for an aggregate period of 43 months, in the years 1866 to 1869 inclusive.

Camp McGarry, by Post Surgeons, for an aggregate period of 38 months, in the years 1866 to 1869 inclusive.

Camp Winfield Scott, by Post Surgeons, for an aggregate period of 34 months, in the years 1866 to 1869 inclusive.

Fort Ruby, by Post Surgeons, for an aggregate period of 62 months, in the years 1863 to 1868 inclusive.

Star City,[1] by R. C. Johnson, during the last three months of the year 1865.

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[1] Surface winds and motion of clouds combined.

(Nos. 37 to 41.) **Nevada.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
37. North-western Nevada.[1]	January	36	29	19	8	6	27	115	10	29	....	...	....	...	93
	February	17	13	43	13	35	27	68	16	23	....	...	....	...	85
	March	43	20	30	18	24	34	77	7	26	....	...	....	...	93
	April	18	14	35	13	21	40	82	14	33	....	...	....	...	90
	May	38	22	31	23	25	21	71	22	26	....	...	....	...	93
	June	17	11	19	16	46	45	83	5	28	....	...	....	...	90
	July	13	12	27	31	49	15	64	15	53	....	...	....	...	93
	August	7	11	61	39	39	43	43	11	25	....	...	....	...	93
	September	12	18	52	24	28	39	64	5	28	....	...	....	...	90
	October	24	31	56	23	9	56	93	26	54	....	...	....	...	124
	November	30	25	31	18	23	70	108	11	44	....	...	....	...	120
	December	12	7	10	2	15	44	129	6	54	....	...	....	...	93
	Spring	99	56	96	54	70	95	230	43	85	S. 87° 38′ W.	.18½	N. 15½° E.	.08	276
	Summer	37	34	107	86	134	103	190	31	106	S. 26 42 W.	.25	S. 34 E.	.17	276
	Autumn	66	74	139	65	60	165	265	42	126	S. 66 43 W.	.19	N. 78 E.	.04	334
	Winter	65	49	72	23	56	98	312	32	106	S. 86 4 W.	.35	N. 68 W.	.15	271
	The year[3]	...	...	...	...	...	...	...	...	...	S. 68 8 W.	.21½	....	...	1157
38. Camp McDermit.	January	8	24	126	13	26	65	96	12	2	....	...	....	...	124
	February	16	30	105	10	24	55	75	21	3	....	...	....	...	113
	March	12	46	117	12	42	46	81	16	0	....	...	....	...	124
	April	20	60	101	12	30	37	71	28	1	....	...	....	...	120
	May	20	41	94	11	17	31	36	28	1	....	...	....	...	93
	June	14	45	79	21	25	21	26	22	17	....	...	....	...	90
	July	8	34	64	2	2	22	28	26	0	....	...	....	...	62
	August	14	28	119	9	15	37	35	19	3	....	...	....	...	93
	September	38	51	125	13	29	41	15	30	18	....	...	....	...	120
	October	20	54	128	30	26	43	27	14	30	....	...	....	...	124
	November	25	59	90	18	34	84	32	16	2	....	...	....	...	120
	December	15	106	100	28	33	91	62	29	1	....	...	....	...	155
	Spring	52	147	312	35	89	114	188	71	2	N. 84 7 E.	.12	N. 55½ W.	.02½	337
	Summer	36	107	262	32	42	80	89	67	20	N. 77 16 E.	.23½	N. 59½ E.	.10½	245
	Autumn	83	164	343	61	89	168	74	60	50	S. 87 58 E.	.24½	S. 86 E.	.11	364
	Winter	39	160	331	51	83	211	233	62	6	S. 32 2 W.	.07½	S. 71 W.	.19	392
	The year[3]	...	...	...	...	...	...	...	...	...	S. 89 10 E.	.14	....	...	1338
39. Camp Winfield Scott.	January	26	13	1	4	15	24	31	60	12	....	...	....	...	62
	February	33	15	2	13	10	54	27	95	6	....	...	....	...	85
	March	20	14	8	21	7	57	35	117	0	....	...	....	...	93
	April	31	7	7	13	14	56	60	82	0	....	...	....	...	90
	May	40	15	4	19	28	57	40	76	0	....	...	....	...	93
	June	14	22	34	36	25	38	45	30	26	....	...	....	...	90
	July	25	11	24	32	37	35	49	23	43	....	...	....	...	93
	August	16	5	41	50	33	32	36	35	31	....	...	....	...	93
	September	5	4	11	31	22	58	65	33	41	....	...	....	...	90
	October	21	27	11	19	3	40	64	24	0	....	...	....	...	62
	November	16	8	8	17	13	35	43	19	21	....	...	....	...	60
	December	89	19	16	27	31	45	48	56	41	....	...	....	...	124
	Spring	91	36	19	53	49	170	135	275	0	N. 74 11 W.	.46	N. 55 W.	.21	276
	Summer	55	38	99	118	95	105	130	88	100	S. 27 41 W.	.15	S. 56 E.	.24	276
	Autumn	42	39	30	67	38	133	172	76	62	S. 75 22 W.	.34	S. 34 W.	.11	212
	Winter	148	47	19	44	56	123	106	211	59	N. 65 31 W.	.25½	N. 20½ E.	.11	271
	The year[3]	...	...	...	...	...	...	...	...	...	N. 89 9 W.	.27	....	...	1035
40. Northern Nevada.[2]	Spring	143	183	331	88	138	284	323	347	2	N. 64 41 W.	.15	N. 50 W.	.09	613
	Summer	91	145	361	150	137	185	219	155	120	S. 58 18 E.	.08	S. 71 E.	.14	521
	Autumn	134	203	374	130	138	367	347	168	127	S. 51 13 W.	.07½	S. 10 E.	.05½	637
	Winter	188	207	350	95	139	334	406	295	68	N. 70 42 W.	.15	N. 59 W.	.08½	694
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 48 W.	.07	....	...	2465
41. Camp Halleck.	Spring	6	18	90	94	70	965	87	95	33	S. 39 33 W.	.64½	S. 77½ W.	.14	399
	Summer	24	28	122	105	119	415	114	16	161	S. 23 42 W.	.38½	N. 47 E.	.17	306
	Autumn	25	34	146	213	74	951	109	22	26	S. 23 33 W.	.55	S. 57½ E.	.07	424
	Winter	23	35	139	141	69	1120	91	37	33	S. 32 59 W.	.62	S. 48 W.	.07	454
	The year[3]	...	...	...	...	...	...	...	...	...	S. 30 59 W.	.55	....	...	1583

[1] Camp McGarry. [2] Camps McDermit and Winfield Scott, and Star City.
[3] Computed from the resultants for the seasons.

(Nos. 42 and 43.) **Nevada.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
42. Fort Ruby.	January	62	71	35	8	6	101	153	101	21	…………	…	………	…	186
	February	59	89	37	4	17	102	120	80	2	…………	…	………	…	170
	March	71	36	57	15	22	111	176	68	2	…………	…	………	…	186
	April	85	61	66	0	9	43	126	59	1	…………	…	………	…	150
	May	36	67	29	15	11	49	91	74	0	…………	…	………	…	124
	June	45	39	34	2	14	28	157	35	18	…………	…	………	…	124
	July	53	68	38	11	27	50	173	48	0	…………	…	………	…	155
	August	54	58	26	13	21	101	68	26	5	…………	…	………	…	124
	September	68	56	60	13	19	92	170	65	0	…………	…	………	…	180
	October	69	77	82	8	17	61	171	70	3	…………	…	………	…	186
	November	80	64	21	7	8	48	90	132	0	…………	…	………	…	150
	December	90	80	9	3	3	74	107	99	0	…………	…	………	…	155
	Spring	192	164	152	30	42	203	393	201	3	N. 58° 1′ W.	.33	S. 76° E.	.02	460
	Summer	152	165	98	26	62	179	398	109	23	N. 69 22 W.	.32½	S. 4 W.	.07	403
	Autumn	217	200	163	28	44	201	431	267	3	N. 52 23 W.	.36	N. 24 E.	.04	516
	Winter	211	240	81	15	26	277	380	280	23	N. 55 59 W.	.40½	N. 37 W.	.05	511
	The year[2]	…	…	…	…	…	…	…	…	…	N. 58 43 W.	.35	………	…	1890
43. North-eastern Nevada.[1]	Spring	198	182	242	124	112	1168	430	296	36	S. 66 28 W.	.34½	S. 50 W.	.03½	859
	Summer	176	193	220	131	181	594	512	125	184	S. 70 7 W.	.25½	N. 60½ E.	.06	709
	Autumn	242	234	309	241	118	1152	540	289	29	S. 67 9 W.	.28	N. 80 E.	.03	940
	Winter.	234	275	220	156	95	1397	471	317	56	S. 69 41 W.	.36	S. 78 W.	.05	965
	The year[2]	…	…	…	…	…	…	…	…	…	S. 68 16 W.	.30	………	…	3473

[1] Camp Halleck and Fort Ruby. [2] Computed from the resultants for the seasons.

(Nos. 44 and 45.) **Idaho**, south of latitude 45°.

Observed by U. S. Army Surgeons at the following military posts, viz.:—

Cantonment Loring or Fort Hall, from August, 1849, to April, 1850, inclusive.

Fort Boise, for an aggregate period of 56 months, in the years 1864 to 1869 inclusive.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
44. South-western Idaho.[1]	January	80	57	33	63	53	26	40	35	78	…………	…	………	…	155
	February	78	54	32	35	44	30	69	100	68	…………	…	………	…	170
	March	56	57	53	50	67	56	96	64	59	…………	…	………	…	186
	April	71	54	62	47	39	34	89	73	71	…………	…	………	…	180
	May	64	63	26	35	40	50	66	61	60	…………	…	………	…	155
	June	21	30	35	22	56	48	81	46	21	…………	…	………	…	120
	July	23	22	31	27	33	42	95	59	40	…………	…	………	…	124
	August	38	31	36	24	18	52	66	65	42	…………	…	………	…	124
	September	56	25	51	32	15	30	65	48	38	…………	…	………	…	120
	October	54	45	41	27	7	23	58	44	73	…………	…	………	…	124
	November	57	66	40	29	11	15	39	34	69	…………	…	………	…	120
	December	101	82	36	63	21	32	54	54	22	…………	…	………	…	155
	Spring	191	174	141	132	146	140	251	198	190	N. 48° 54′ W.	.11	S. 1° E.	.03½	521
	Summer	82	83	102	73	107	142	242	170	103	N. 89 34 W.	.23	S. 54 W.	.18	368
	Autumn	167	136	132	88	33	68	162	126	180	N. 2 24 W.	.19	N. 42 E.	.11	364
	Winter	259	193	101	161	118	88	163	189	168	N. 1 50 W.	.16½	N. 53 E.	.10	480
	The year[3]	…	…	…	…	…	…	…	…	…	N. 37 5 W.	.13½	………	…	1733
45. South-eastern Idaho.[2]	March	25	0	17	0	54	0	15	2	0	…………	…	………	…	31
	April	19	0	3	0	60	1	21	0	0	…………	…	………	…	30
	August	12	0	9	2	19	23	47	2	0	…………	…	………	…	31
	September	22	3	9	1	41	6	31	0	0	…………	…	………	…	30
	October	19	5	3	1	49	5	35	1	0	…………	…	………	…	31
	November	14	4	7	8	74	3	7	3	0	…………	…	………	…	30
	December	58	2	4	0	57	0	3	0	0	…………	…	………	…	31
	Spring	44	0	20	0	114	1	36	2	0	S. 14 39 W.	.33	………	…	61
	Summer	12	0	9	2	19	23	47	2	0	S. 66 47 W.	.52	………	…	31
	Autumn	55	12	19	10	164	14	73	4	0	S. 24 3 W.	.36	………	…	91
	Winter	115	9	21	2	169	2	12	3	0	S. 15 19 E.	.15	………	…	90
	The year[3]	…	…	…	…	…	…	…	…	…	S. 33 47 W.	.30	………	…	273

[1] Fort Boise. [2] Cantonment Loring or Fort Hall. [3] Computed from the resultants for the seasons.

(Nos. 46 to 50.) **Utah,** north of latitude 40°.

Observed at the following places, viz.:—

Camp Douglas, by Post Surgeons, for an aggregate period of $6\frac{3}{4}$ years, in the years 1862 to 1869 inclusive.

Camp Floyd,[1] by Post Surgeons, for an aggregate period of 18 months, in the years 1860 and 1861.

Camp Scott, by Post Surgeons, from December, 1857, to June, 1858, inclusive.

Coalville, by Thomas Bullock, during the last eight months of the year 1869.

Fort Bridger, by Post Surgeons, for an aggregate period of $9\frac{3}{4}$ years, in the years 1856 to 1869 inclusive.

Great Salt Lake City, by H. E. and W. W. Phelps, for an aggregate period of nearly 6 years, in the years 1857, 1861 and 1863 to 1869 inclusive; and by U. S. Army Surgeon during the months of November and December, 1854.

Wanship, by Thomas Bullock, for an aggregate period of $2\frac{1}{2}$ years, in the years 1866 to 1869 inclusive.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
46. Camp Douglas.	January	283	157	15	16	30	18	53	82	0	....	...	....	...	217
	February	237	152	26	14	38	16	40	71	0	....	...	....	...	198
	March	206	131	40	31	41	45	38	86	33	....	...	....	...	217
	April	175	154	79	39	63	45	50	118	0	....	...	....	...	240
	May	102	126	62	64	52	50	59	85	0	....	...	....	...	186
	June	128	109	72	14	40	32	83	62	0	....	...	....	...	180
	July	118	114	75	21	44	35	97	54	0	....	...	....	...	186
	August	157	124	55	14	53	37	78	40	0	....	...	....	...	186
	September	149	133	71	25	69	47	43	90	3	....	...	....	...	210
	October	169	142	94	35	44	24	65	78	0	....	...	....	...	217
	November	146	106	79	29	59	42	75	92	2	....	...	....	...	210
	December	230	134	21	11	49	23	46	75	62	....	...	....	...	217
	Spring	483	411	181	134	156	140	147	289	33	N. 10° 28′ E.	.32½	S. 17° E.	.05	643
	Summer	403	347	202	49	137	104	258	156	0	N. 4 28 E.	.31	S. 16½ W.	.06½	552
	Autumn	464	381	244	89	172	113	183	260	5	N. 12 8 E.	.32	S. 18½ E.	.07	637
	Winter	750	443	62	41	117	57	139	228	62	N. 3 31 E.	.55	N. 4 W.	.18	632
	The year[3]	...	...	...	...	...	...	...	...	...	....	.37½	....	...	2464
47. Surface wind at Great Salt Lake City in the year 1857.[2] No. of observations.	Spring	40	3	6	6	14	2	10	33	...	N. 26 3 W.	.447			
	Summer	49	0	14	5	32	5	2	11	...	N. 13 25 E.	.154			
	Autumn	11	1	5	1	9	1	2	4	...	N. 12 3 E.	.120			
	Winter	4	0	0	0	12	0	0	1	...	S. 5 34 W.	.431			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 36 22 W.	.075			
No. of miles.	Spring	205	18	37	26	72	4	61	150	...	N. 23 48 W.	.439			
	Summer	237	0	53	41	217	22	6	42	...	N. 80 29 E.	.049			
	Autumn	42	2	16	4	67	4	8	22	...	S. 24 10 W.	.088			
	Winter	6	0	0	0	68	0	0	4	...	S. 2 44 W.	.758			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 28 21 W.	.103			
M'n vel. in miles p. h'r.	Spring	5.12	6.00	6.17	4.33	5.14	2.00	6.10	4.55						
	Summer	4.84	0	3.79	8.20	6.78	4.40	3.00	3.82						
	Autumn	3.82	2.00	3.20	4.00	7.44	4.00	4.00	5.50						
	Winter	1.50	0	0	0	5.67	0	0	4.00						

[1] Fort Crittenden.

[2] From these observations we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.03	5.24	4.85	4.59	4.93
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.25	.81	.58	1.98	.37
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	2.21	.26	.43	3.48	.51
Excess of the latter over the former	—.04	—.55	—.15	+1.50	+.14

[3] Computed from the resultants for the seasons.

(Nos. 48 to 50.) **Utah.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
48. Northern Central Utah.[1] Surface wind.	Spring	1070	637	433	445	722	459	472	662	51	N. 6° 4′ W.	.13	N. 87° E.	.02	
	Summer	1069	639	612	438	906	584	844	582	138	N. 44 10 W.	.07	S. 13 W.	.08	
	Autumn	985	696	555	380	673	406	645	696	56	N. 8 20 W.	.15	N. 22½ E.	.02	
	Winter	1191	704	307	393	693	384	488	689	93	N. 9 57 W.	.19	N. 4 W.	.06	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 13 37 W.	.13			
Motion of clouds.	Spring	138	15	7	3	96	137	106	84	...	N. 86 56 W.	.41½	N. 49½ E.	.18	
	Summer	56	34	22	13	106	257	271	66	...	S. 69 2 W.	.57½	S. 9½ E.	.12	
	Autumn	43	6	3	2	42	120	199	114	...	S. 89. 56 W.	.67	N. 51 W.	.15	
	Winter	42	0	1	0	78	133	123	68	...	S. 72 46 W.	.62	S. 21 W.	.10	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 80 35 W.	.56			
2 preceding combined.	Spring	1208	652	440	448	818	596	578	746	51	N. 25 46 W.	.13	N. 72½ E.	.03	
	Summer	1125	673	634	451	1012	841	1115	648	138	N. 79 46 W.	.11	S. 16 W.	.09½	
	Autumn	1028	702	558	382	715	526	844	810	56	N. 32 6 W.	.16	N. 3½ W.	.03	
	Winter	1233	704	308	393	771	517	611	757	93	N. 26 42 W.	.18	N. 3 E.	.05	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 37 3 W.	.13½			
49. Fort Bridger. Surface winds.	January	49	62	26	3	2	100	497	120	71	....	...	....	...	310
	February	36	35	23	7	14	115	453	103	60	....	...	....	...	282
	March	28	27	27	15	4	129	528	96	76	....	...	....	...	310
	April	21	28	27	6	9	122	502	112	73	....	...	....	...	300
	May	25	42	59	11	17	125	429	147	75	....	...	....	...	310
	June	42	14	31	5	13	38	394	143	130	....	...	....	...	270
	July	54	21	16	11	13	105	463	118	129	....	...	....	...	310
	August	55	17	16	10	21	145	369	126	78	....	...	....	...	279
	September	36	21	19	14	10	147	478	119	56	....	...	....	...	300
	October	35	36	47	15	14	144	428	154	57	....	...	....	...	310
	November	39	33	31	17	7	139	422	115	97	....	...	....	...	300
	December	32	93	45	2	2	92	467	133	64	....	...	....	...	310
	Spring	74	97	113	32	30	376	1459	355	224	N. 87 34 W.	.64½	S. 33 W.	.04	920
	Summer	151	52	63	26	47	288	1226	387	337	N. 83 5 W.	.62	N. 21 E.	.02	859
	Autumn	110	90	97	46	31	430	1328	388	210	N. 87 19 W.	.63	S. 19½ W.	.03	910
	Winter	117	190	94	12	18	307	1417	356	195	N. 81 9 W.	.61½	N. 23 E.	.04	902
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 50 W.	.63	....	...	3591
Motion of clouds.	Spring	33	4	53	6	96	9	5	2	...	S. 34 18 E.	.40	S. 63 W.	.30	92
	Summer	0	7	45	8	1	0	1	0	...	S. 88 12 E.	.88	N. 65 E.	.42	61
	Autumn	0	1	84	0	3	1	2	0	...	S. 87 54 E.	.90	N. 67 E.	.43	91
	Winter	23	0	13	0	73	0	13	0	...	South.	.41	S. 67½ W.	.55	59
	The year[3]	...	...	...	...	...	...	...	...	...	S. 68 13 E.	.54	....	...	303
50. North-eastern Utah.[2]	Spring	83	111	127	41	58	460	1552	374	230	N. 89 35 W.	.63	S. 30 W.	.04	1012
	Summer	151	56	70	28	51	291	1247	388	385	N. 83 17 W.	.60½	N. 15½ E.	.04	889
	Autumn	110	90	97	46	31	430	1328	388	210	N. 87 19 W.	.63	S. 54 W.	.02	910
	Winter	132	199	98	15	60	458	1426	363	225	N. 85 37 W.	.59	N. 68 E.	.03	992
	The year[3]	...	...	...	...	...	...	...	...	...	N. 86 27 W.	.61	....	...	3803

[1] Camps Douglas and Floyd, Coalville, Great Salt Lake City and Wanship.

[2] Fort Bridger and Camp Scott.

[3] Computed from the resultants for the season.

(Nos. 51 to 55.) **Wyoming.**

Observed at the following places, viz. :—

Camp Walbach, by Post Surgeons, from December, 1858, to March, 1859, inclusive.

Deer Creek Agency, by Thomas S. Twiss, during the months of November and December, 1859.

Fort Fetterman, by Post Surgeons, for an aggregate period of 12 months, in the years 1868 and 1869.

Fort Laramie, by Post Surgeons, for an aggregate period of 14¾ years, in the years 1849, 1851 to 1865 inclusive, and 1869; also by A. F. Zeigler, from September, 1863, to November, 1864, inclusive, and March, 1865.

Fort Philip Kearney, by Post Surgeons, for an aggregate period of 31 months, in the years 1867, 1868 and 1869.

(Nos. 51 to 55.) **Wyoming.**—*Continued.*

Fort Sanders, by Post Surgeons, for an aggregate period of $2\frac{1}{2}$ years, in the years 1867, 1868 and 1869.

Gilbert's Trading Post, by Charles H. Miller, during the months of December, 1858, and January, 1859.

Sweet Water Bridge, from March to May inclusive, in the year 1864.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
51. Western Wyoming.[1]	January[5]	5	1	1	1	14	31	65	10	1	....	...	....	...	31
	March	10	7	2	4	2	23	17	28	0	....	...	....	...	31
	April	5	7	4	2	5	28	14	25	0	....	...	....	...	30
	May	0	26	2	1	0	23	13	28	0	....	...	....	...	31
	December[5]	8	9	20	5	5	22	24	0	0	....	...	....	...	31
	Spring	15	40	8	7	7	74	44	81	0	N. 72° 7′ W.	.43	....	...	92
	Winter	13	10	21	6	19	53	89	10	1	S. 71 39 W.	.48	....	...	62
52. North-eastern Wyoming.[2]	January	25	4	11	18	17	24	58	93	29	....	...	....	...	93
	February	33	8	17	28	42	27	20	56	24	....	...	....	...	85
	March	35	22	8	24	42	43	25	68	12	....	...	....	...	93
	April	52	18	14	29	50	18	13	65	11	....	...	....	...	90
	May	59	13	13	27	52	28	18	50	19	....	...	....	...	93
	June	53	12	3	17	34	54	36	45	16	....	...	....	...	90
	July	55	17	0	27	57	55	7	38	23	....	...	....	...	93
	August	13	8	0	23	68	30	0	16	28	....	...	....	...	62
	September	5	0	0	22	67	35	5	22	24	....	...	....	...	60
	October	7	1	0	15	70	21	0	38	34	....	...	....	...	62
	November	12	16	20	18	30	11	24	9	40	....	...	....	...	60
	December	25	16	23	9	6	11	44	25	27	....	...	....	...	62
	Spring	146	53	35	80	144	89	56	183	42	N. 67 31 W.	$.16\frac{1}{2}$	N. 16° E.	.13	276
	Summer	121	37	3	67	159	139	43	99	67	S. 57 1 W.	.22	S. 5 E.	$.05\frac{1}{2}$	245
	Autumn	24	17	20	55	167	67	29	69	98	S. 29 13 W.	.35	S. 5 E.	.24	182
	Winter	83	28	51	55	65	62	122	174	80	N. 66 27 W.	.27	N. $19\frac{1}{2}$ W.	.18	240
	The year[6]	...	...	...	...	...	...	...	...	...	S. 70 50 W.	.20	....	...	943
53. Fort Saunders.	Spring	39	40	100	44	43	35	133	134	77	N. 55 51 W.	.18	N. 46 E.	$.10\frac{1}{2}$	215
	Summer	33	24	83	66	86	78	127	102	49	S. 58 36 W.	$.19\frac{1}{2}$	S. 23 E.	$.14\frac{1}{2}$	216
	Autumn	58	48	88	52	118	82	230	150	83	S. 86 25 W.	.26	S. $41\frac{1}{4}$ W.	.06	303
	Winter	61	40	64	27	45	57	196	152	87	N. 68 19 W.	$.34\frac{1}{2}$	N. $43\frac{1}{2}$ W.	.14	243
	The year[6]	...	...	...	...	...	...	...	...	...	N. 83 4 W.	$.22\frac{1}{2}$	....	...	977
54. Fort Laramie.[3]	January	151	87	127	44	24	122	688	286	89	....	...	....	...	496
	February	140	71	94	27	28	93	681	248	3	....	...	....	...	433
	March	136	96	120	23	31	66	667	283	97	....	...	....	...	465
	April	144	109	183	49	48	44	429	289	85	....	...	....	...	420
	May	91	142	244	83	82	108	535	209	56	....	...	....	...	496
	June	71	95	262	125	123	153	386	136	14	....	...	....	...	454
	July	97	151	215	127	122	112	306	95	77	....	...	....	...	434
	August	83	135	344	157	89	151	328	186	30	....	...	....	...	501
	September	122	157	243	85	102	132	463	264	52	....	...	....	...	540
	October	126	163	186	63	58	122	602	351	28	....	...	....	...	566
	November	165	210	130	43	68	131	668	264	34	....	...	....	...	552
	December	186	141	118	18	52	143	775	276	74	....	...	....	...	558
	Spring	371	347	547	155	161	218	1631	781	238	N. 62 36 W.	$.36\frac{1}{2}$	N. 26 W.	$.05\frac{1}{2}$	1381
	Summer	251	381	821	409	334	416	1020	417	121	S. 66 1 W.	.06	S. 59 E.	$.28\frac{1}{2}$	1389
	Autumn	413	530	559	191	228	385	1733	879	114	N. 63 35 W.	$.34\frac{1}{2}$	N. 15 W.	$.03\frac{1}{2}$	1658
	Winter	477	299	339	89	104	358	2144	810	166	N. 70 22 W.	$.54\frac{1}{2}$	N. 73 W.	$.22\frac{1}{2}$	1487
	The year[6]	...	...	...	...	...	...	...	...	...	N. 68 12 W.	.32	....	...	5915
55. South-eastern Wyoming.[4]	Spring	442	405	675	240	277	323	1825	961	315	N. 65 25 W.	.32	N. 13 W.	.05	1719
	Summer	304	431	929	532	460	550	1174	544	170	S. 55 33 W.	.08	S. 59 E.	.25	1697
	Autumn	492	602	684	282	382	570	2093	1075	205	N. 70 24 W.	.32	N. 34 W.	.03	2112
	Winter	559	351	428	137	205	549	2503	1009	265	N. 73 39 W.	.49	N. 74 W.	.19	1910
	The year[6]	...	...	...	...	...	...	...	...	...	N. 73 32 W.	.30	....	...	7438

[1] Gilbert's Trading Post and Sweet Water Bridge. [2] Fort Philip Kearney.
[3] Camp Walbach, Deer Creek Agency, and Forts Fetterman, Laramie and Sanders.
[4] Separate months for the last seven years only. [5] Surface winds and motion of clouds combined.
[6] Computed from the resultants for the seasons.

(Nos. 56 to 58.) **Colorado,** north of latitude 40°.

Observed by Post Surgeons at the following military posts, viz. :—

Fort Morgan, for an aggregate period of 25 months, in the years 1867, 1868 and 1869.

Fort Sedgwick, for an aggregate period of 29 months, in the years 1867, 1868 and 1869.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		No. of days.
		North.	N.E. or between N. & E.	East.	S. E or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
56. Fort Morgan.	Spring	36	95	124	107	50	67	71	95	90	S. 88° 6′ E.	.11	N. 16° W.	.13	245
	Summer	38	8	127	110	149	29	37	34	20	S. 35 40 E.	.40	S. 24 E.	.22	184
	Autumn	35	24	93	125	36	32	68	17	26	S. 49 17 E.	.28	S. 51 E.	.09	152
	Winter	14	42	157	90	12	41	147	91	42	N. 71 10 E.	.02	N. 43 W.	.18	212
	The year[2]	...	...	...	...	...	...	...	...	...	S. 48 38 E.	.19	....	...	793
57. Fort Sedgwick.	Spring	26	109	40	106	44	131	63	189	27	N. 75 31 W.	.14	N. 73 E.	.03	245
	Summer	35	102	39	134	103	116	69	109	28	S. 13 5 W.	.13	S. 42 E.	.21	245
	Autumn	55	74	24	76	38	89	100	118	65	N. 72 46 W.	.19	N. 27 W.	.03½	213
	Winter	34	44	19	41	45	46	106	168	49	N. 66 32 W.	.35	N. 53 W.	.19	184
	The year[2]	...	...	...	...	...	...	...	...	...	N. 81 29 W.	.17	....	...	887
58. North-eastern Colorado.[1]	Spring	62	204	164	213	94	198	134	284	117	N. 35 23 W.	.02	N. 11 E.	.06	490
	Summer	73	110	166	244	252	145	106	143	48	S. 21 29 E.	.23	S. 28 E.	.20	429
	Autumn	90	98	117	201	74	121	168	135	91	S. 23 18 W.	.05	S. 69 E.	.04	365
	Winter	48	86	176	131	57	87	253	259	91	N. 64 39 W.	.16	N. 47½ W.	.16½	396
	The year[2]	...	...	...	...	...	...	...	...	...	S. 27 6 W.	.05	....	...	1680

[1] Forts Morgan and Sedgwick. [2] Computed from the resultants for the seasons.

(Nos. 59 to 62.) **Dakotah,** south of latitude 45°.

Observed at the following places, viz. :—

Fort Dakota, by Post Surgeons, for an aggregate period of 10 months, in the years 1866, 1868 and 1869.

Fort Pierre, by Post Surgeons, for an aggregate period of 21 months, in the years 1855, 1856 and 1857; also by M. C. Rosseau, for an aggregate period of 8 months, in the years 1860 and 1861

Fort Randall, by Post Surgeons, for an aggregate period of nearly 12 years, in the years 1856 to 1869 inclusive.

Fort Sully, by Post Surgeons, for an aggregate period of 19 months, in the years 1866, 1868 and 1869.

Greenwood, by F. Norvell, from November, 1859, to May, 1861, and 4 months in 1862.

Yankton, by S. D. Hill, during the month of March, 1860.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
59. Fort Pierre.	Spring	168	106	135	205	48	35	99	219	28	N. 22° 58′ E.	.19	N. 7° E.	.08	348
	Summer	29	30	75	144	28	15	18	80	4	S. 73 24 E.	.28	S. 49½ E.	.27	153
	Autumn	35	80	80	116	64	74	81	147	22	S. 81 21 W.	.03	S. 45 W.	.13½	243
	Winter	111	78	107	52	37	38	73	199	25	N. 11 25 W.	.29	N. 32½ W.	.22½	240
	The year[1]	...	...	...	...	...	...	...	...	...	N. 34 13 E.	.11½	....	...	984

[1] Computed from the resultants for the seasons.

(Nos. 60 to 62.) **Dakotah.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
60. Southern Central Dakotah.[1] Surface winds.	Spring	236	155	204	243	73	65	176	308	42	N. 9° 31′ E.	.18½	N. 23° E.	.07	511
	Summer	47	55	129	164	51	39	54	140	20	S. 84 39 E.	.15	S. 49 E.	.19½	245
	Autumn	94	93	165	144	88	93	173	253	49	N. 45 42 W.	.10	S. 58 W.	.08½	394
	Winter	173	107	193	103	53	91	186	303	51	N. 24 27 W.	.24	N. 44½ W.	.15	420
	The year[3]	...	...	...	...	...	...	...	...	...	N. 1 1 E.	.11	....	...	1570
Motion of clouds.	Spring	39	32	19	24	21	18	47	28	...	N. 34 16 W.	.16½	S. 41 E.	.11	123
	Summer	18	19	44	13	19	20	26	52	...	N. 21 41 W.	.13	S. 49 E.	.15	92
	Autumn	12	5	23	2	2	7	27	48	...	N. 42 41 W.	.44½	N. 52½ W.	.17	61
	Winter	40	8	22	6	6	16	31	33	...	N. 35 26 W.	.36	N. 31 W.	.09	90
	The year[3]	...	...	...	...	...	...	...	...	...	N. 36 29 W.	.27	....	...	366
2 preceding combined.	Spring	275	187	223	267	94	83	223	336	42	N. 4 40 E.	.17½	N. 39 E.	.06	634
	Summer	65	74	173	177	70	59	80	192	20	N. 80 7 E.	.10	S. 47½ E.	.16½	337
	Autumn	106	98	188	146	90	100	200	301	49	N. 44 44 W.	.14	S. 69 W.	.08	455
	Winter	213	115	215	109	59	107	217	336	51	N. 26 6 W.	.25	N. 40 W.	.13	510
	The year[3]	...	...	...	...	...	...	...	...	...	N. 9 55 W.	.13			1936
61. Fort Randall.	January	292	49	87	103	171	108	89	211	6	....	...	....	...	372
	February	284	42	77	132	159	73	80	168	2	....	...	....	...	339
	March	268	77	71	151	168	66	96	214	5	....	...	....	...	372
	April	281	90	102	145	130	53	89	189	11	....	...	....	...	360
	May	240	79	79	186	140	59	81	135	22	....	...	....	...	341
	June	146	74	100	252	166	66	49	133	4	....	...	....	...	330
	July	145	60	110	229	220	87	85	87	4	....	...	....	...	341
	August	139	57	102	200	203	67	67	91	10	....	...	....	...	310
	September	198	65	95	211	194	86	77	153	1	....	...	....	...	360
	October	252	51	98	156	204	113	105	246	1	....	...	....	...	403
	November	262	37	96	138	105	100	98	241	3	....	...	....	...	360
	December	327	47	96	182	183	94	118	252	3	....	...	....	...	434
	Spring	789	246	252	482	438	178	266	538	38	N. 0 43 W.	.13½	N. 1° E.	.09	1073
	Summer	430	191	312	681	589	220	201	311	18	S. 38 35 E.	.19	S. 32½ E.	.23	981
	Autumn	712	153	289	505	503	299	280	640	3	N. 43 19 W.	.08	N. 74 W.	.05	1123
	Winter	903	138	260	417	513	275	287	631	11	N. 31 40 W.	.15	N. 42 W.	.11	1145
	The year[3]	...	...	...	...	...	...	...	...	...	N. 6 12 W.	.04½	....	...	4322
62. South-eastern Dakotah.[2]	Spring	929	289	308	599	549	228	314	779	199	N. 9 18 W.	.13	N. 32 E.	.10	1349
	Summer	446	201	335	780	646	238	218	361	32	S. 36 32 W.	.20	S. 12 W.	.21	1103
	Autumn	783	203	306	616	584	376	342	875	118	N. 52 44 W.	.10	N. 8½ W.	.02	1396
	Winter	1001	208	305	513	586	327	335	852	145	N. 31 48 W.	.16	N. 5 W.	.09½	1416
	The year[3]	...	...	...	...	...	...	...	...	...	N. 61 18 W.	.09	....	...	5264

[1] Forts Pierre and Sully.

[2] Greenwood, Yankton and Forts Dakotah and Randall—surface winds and motion of clouds combined.

[3] Computed from the resultants for the seasons.

(Nos. 63 to 65.) **Southern and Northeastern Nebraska.**

Observed at the following places, viz. :—

Blackbird Hills, by Rev. Wm. Hamilton, for an aggregate period of 24 months, in the years 1867, 1868 and 1869.

Dakota City, by H. H. Brown, for an aggregate period of 16 months, in the above years.

Decatur, by G. C. Case, from March to July inclusive, in the year 1869.

De Soto, by Charles Seitz, from May, 1867, to December, 1869, inclusive.

Fort Kearney, by Post Surgeons, for an aggregate period of nearly 15½ years, in the years 1849 to 1863, and 1865 to 1868 both inclusive.

Fort McPherson, by Post Surgeons, for an aggregate period of 24 months, in the years 1866, 1868 and 1869.

Ionia, by L. J. Hill, during the months of July and August, 1865.

(Nos. 63 to 65.) **Southern and Northeastern Nebraska.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
63. Fort Kearny.[1]	January	396	115	66	71	183	173	294	281						
	February	297	145	56	86	196	167	203	253						
	March	271	156	81	134	198	128	122	278						
	April	329	194	94	178	148	104	81	308						
	May	195	223	117	188	205	117	123	162						
	June	161	172	105	700	272	109	103	154						
	July	118	174	117	249	370	164	87	81						
	August	202	213	142	209	380	146	95	79						
	September	239	192	101	126	339	118	139	154						
	October	400	119	61	104	248	139	208	259						
	November	488	147	54	127	188	113	235	321						
	December	422	115	45	89	176	86	164	244						
	Spring	795	573	292	500	551	349	326	748	...	N. 5° 3′ W.	.14	....	...	1380
	Summer	481	559	364	1158	1022	419	285	314	...	S. 36 44 E.	.28	....	...	1319
	Autumn	1127	458	216	357	775	370	582	734	...	N. 39 57 W.	.19	....	...	1416
	Winter	1115	375	167	246	555	426	661	778	...	N. 45 12 W.	.29	....	...	1470
	The year[4]	...	...	...	...	...	...	..	...	...	N. 33 21 W.	.08	....	...	5585
64. Southern Nebraska.[2]	Spring	907	607	353	550	653	397	429	841	...	N. 12 22 W.	.13	N. 21° E.	.07	1581
	Summer	530	623	431	1257	1124	465	347	365	...	S. 36 37 E.	.27	S. 37 E.	.35	1499
	Autumn	1243	488	272	451	878	454	649	910	...	N. 43 31 W.	.18½	N. 46½ W.	.10½	1658
	Winter	1252	414	225	301	631	480	795	953	...	N. 46 22 W.	.29½	N. 49 W.	.21	1713
	The year[4]	...	...	...	...	...	...	...	...	...	N. 39 38 W.	.08	....	...	6451
65. Northeastern Nebraska.[3] Surface winds.	Spring	325	193	154	174	326	143	163	366	77	N. 32 45 W.	.10½	....	...	215
	Summer	212	76	81	133	551	178	130	179	28	S. 22 6 W.	.26	....	...	338
	Autumn	259	73	66	134	407	173	219	314	62	S. 75 24 W.	.21	....	...	273
	Winter	310	78	54	136	276	149	202	379	80	N. 67 12 W.	.24	....	...	212
	The year[4]	...	...	...	...	...	...	...	...	...	S. 79 2 W.	.15	....	...	1038
Motion of clouds.	Spring	38	12	3	12	17	19	20	48	...	N. 48 47 W.	.37	....	...	215
	Summer	32	9	12	15	16	42	34	30	...	N. 85 56 W.	.29½	....	...	276
	Autumn	27	4	3	5	4	24	15	37	...	N. 57 10 W.	.49	....	...	213
	Winter	16	5	0	6	7	11	9	23	...	N. 56 25 W.	.39	....	...	153
	The year[4]	...	...	...	...	...	...	...	...	...	N. 60 15 W.	.38	....	...	857
2 preceding combined.	Spring	363	205	157	186	343	162	183	414	77	N. 36 55 W.	.13	N. 36 E.	.14½	215
	Summer	244	85	93	148	567	220	164	209	28	S. 29 11 W.	.25½	S. 10½ E.	.21½	338
	Autumn	286	77	69	139	411	197	234	351	62	S. 81 28 W.	.22	S. 70 W.	.06	273
	Winter	326	83	54	142	283	160	211	402	80	N. 66 26 W.	.25	N. 30 W.	.13	212
	The year[4]	...	...	...	...	...	...	...	...	...	S. 85 49 W.	.16	....	...	1038

[1] Separate months only from the year 1849 to 1854 inclusive, and subsequent to 1859.
[2] Forts Kearny and McPherson. [3] Blackbird Hills, Dakota City, Decatur, De Soto and Ionia.
[4] Computed from the resultants for the seasons.

(Nos. 66 to 68.) **Southeastern Nebraska.**

Observed at the following places, viz.:—

Bellevue, by Rev. Wm. Hamilton, Henry M. Burt and Miss E. E. Caldwell, for an aggregate period of 11½ years, from June, 1857, to December, 1862, May, 1863, to February, 1867, April to June, 1867, and March, 1868, to December, 1869, all inclusive.

Brownsville, by Chas. B. Smith, for an aggregate period of 14 months, in the years 1858, 1859 and 1860.

Council Bluffs,[1] by U. S. Army Surgeons, during the years 1822 to 1826 inclusive.

Elkhorn,[2] by John S. and Anna M. J. Bowen, for an aggregate period of 10½ years, in the years 1859 to 1869 inclusive.

Fontenelle, by Henry Gibson, from January, 1861, to June, 1862, and from September to December, 1863, both inclusive.

Glendale, by Dr. A. C. Child and Miss J. E. Child, from August to October, 1861, and from February, 1866, to October, 1869, both inclusive.

Kenosha, by Bela White, from January to May, 1860, and from July, 1860, to May, 1862, both inclusive.

[1] This military post was located on the west bank of the Missouri River, in the maps of the United States War Department, and is placed some miles to the northwest of the present city of Council Bluffs, Iowa. [2] Or Richland.

(Nos. 66 to 68.) **Southeastern Nebraska.**—*Continued.*

Nebraska City, by P. Zahner, from July, 1868, to June, 1869, and from October to December, 1869, both inclusive.

Nursery Hill, by R. O. Thompson, during the first five months of the year 1865.

Omaha, by Wm. N. Byers, from May, 1857, to December, 1859, inclusive; by James P. Allan, for an aggregate period of 8 months, in the years 1860 and 1861, and by C. B. Wells, for an aggregate period of 4 months, in 1868 and 1869.

Peru, by J. M. McKenzie, for an aggregate period of 5 months in the years 1867 and 1869.

Rock Bluffs, by H. C. Pardee, from October, 1860, to February, 1861, inclusive.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
66. Council Bluffs.		January	42	12	2	20	35	11	5	28	...	....	...	....	...	155
		February	32	5	2	10	26	15	12	39	...	....	...	....	...	141
		March	53	9	4	21	18	10	6	34	...	....	...	....	...	155
		April	27	11	9	22	41	9	11	20	...	....	...	....	...	150
		May	14	12	9	18	61	13	9	19	...	....	...	....	...	155
		June	16	13	16	24	49	13	9	10	...	....	...	....	...	150
		July	13	13	16	30	49	18	3	13	...	....	...	....	...	155
		August	25	11	17	14	60	13	5	10	...	....	...	....	...	155
		September	17	11	12	20	43	16	6	23	...	....	...	....	...	150
		October	38	3	5	18	38	25	8	20	...	....	...	....	...	155
		November	52	9	2	12	34	6	9	26	...	....	...	....	...	150
		December	66	10	3	13	29	7	3	24	...	....	...	....	...	155
		Spring	94	32	22	61	120	32	26	73	...	S. 35° 30′ W.	.05	....	...	460
		Summer	54	37	49	68	158	44	17	33	...	S. 21 11 E.	.31	....	...	460
		Autumn	107	23	19	50	115	47	23	69	...	S. 71 28 W.	.08	....	...	455
		Winter	140	27	7	43	90	33	20	91	...	N. 32 43 W.	.21	....	...	451
		The year	395	119	97	222	483	161	86	266	...	S. 29 54 W.	.05½	....	...	1826
67. Surface wind at Bellevue and Omaha in the year 1857.[1]	No. of observations.	Spring	4	0	0	4	7	4	2	13	...	N. 87 17 W.	.287	....	...	31
		Summer	126	17	11	36	182	35	11	41	...	S. 14 1 W.	.131	....	...	184
		Autumn	108	29	27	59	121	44	29	69	...	S. 49 57 W.	.049	....	...	182
		Winter	37	6	2	6	41	23	11	29	...	N. 89 38 W.	.204	....	...	62
		The year[2]	...	...	...	...	...	...	...	...	...	[illegible]. 75 34 W.	.145	....	...	459
	No. of miles.	Spring	53	0	0	22	32	107	6	168	...	N. 75 17 W.	.42			
		Summer	652	103	61	245	1204	308	66	414	...	S. 25 1 W.	.19			
		Autumn	979	176	145	359	1226	365	116	622	...	S. 56 25 W.	.08			
		Winter	230	12	4	18	109	86	26	180	...	N. 45 52 W.	.33½			
		The year[2]	...	...	...	...	...	...	...	...		N. 83 45 W.	.22½			
	M'n vel. in miles p'r hour.	Spring	13.25	0	0	5.50	4.57	26.75	3.00	12.92						
		Summer	5.17	6.06	5.55	6.81	6.62	8.80	6.00	10.10						
		Autumn	9.06	6.07	5.37	6.08	10.13	8.30	4.00	9.01						
		Winter	6.22	2.00	2.00	3.00	2.66	3.74	2.36	6.21						
68. Aggregate number of observations at all stations.	Surface wind.	Spring	1768	1151	549	1502	1336	766	461	2425	303	N. 12 10 W.	.13½	....	...	1903
		Summer	1032	1131	620	2108	2438	1114	354	1134	438	S. 24 54 E.	.22	....	...	2146
		Autumn	1482	842	314	1478	1847	1080	521	2444	532	N. 81 57 W.	.10	....	...	2093
		Winter	1582	772	300	1169	1553	1126	714	2809	426	N. 62 45 W.	.20	....	...	1955
		The year	5864	3896	1783	6257	7174	4086	2050	8812	1699	N. 52 58 W.	.07	....	...	8097
	Motion of clouds.	Spring	462	138	107	179	332	351	464	529	...	N. 73 17 W.	.09	....	...	1351
		Summer	319	160	71	240	482	525	480	421	...	S. 69 46 W.	.31½	....	...	1563
		Autumn	304	122	69	116	293	346	375	460	...	N. 82 17 W.	.34	....	...	1517
		Winter	457	164	103	144	293	359	448	565	...	N. 67 28 W.	.33	....	...	1384
		The year[2]	...	...	...	...	...	...	...	...	...	N. 83 54 W.	.31	....	...	5815
	2 preceding combined.	Spring	2230	1289	656	1681	1668	1117	925	2954	303	N. 33 29 W.	.15	N. 9½° E.	.11	1903
		Summer	1351	1291	691	2348	2920	1639	834	1555	438	S. 4 8 E.	.18	S. 30½ E.	.22½	2146
		Autumn	1786	964	383	1594	2140	1426	896	2904	532	N. 82 5 W.	.14	N. 80 W.	.03½	2093
		Winter	2039	936	403	1313	1846	1485	1162	3374	426	N. 64 8 W.	.22	N. 50½ W.	.12½	1955
		The year	7406	4480	2133	6936	8574	5667	3817	10787	1699	N. 82 14 W.	.10½	....	...	8097

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	11.41	6.65	8.21	4.29	7.64
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity . .	3.27	0.87	.40	.88	1.11
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	4.90	1.25	.66	1.44	1.72
Excess of the latter over the former	+1.63	.38	.26	.56	.61

[2] Computed from the resultants for the seasons.

(Nos. 69 and 70.) **Northwestern Iowa.**

Observed at the following places, viz.:—

Grant City, by Edwin Miller and Mrs. Miller, during the year 1869.

Lizard, by J. J. Bruce, during the month of February, 1869.

Onowa, by R. Stebbins, from February to September inclusive, in the year 1864.

Rolfe, by Oscar J. Strong, for an aggregate period of 22 months, in the years 1868 and 1869.

Sioux City, by Dr. J. J. Saville, for an aggregate period of 16 months, in the years 1857 and 1858; and by A. J. Millard, from January, 1860, to March, 1863, inclusive, and by U. S. Army Surgeons, during the first 4 months of 1864.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
69. Surface wind at Sioux City in the year 1857.[1] No. of observat'ns.	Summer	1	1	1	3	22	3	2	16	...	S. 41° 16′ W.	.359		
	Autumn	7	4	3	18	25	15	0	66	...	N. 78 6 W.	.287		
	Winter	3	0	4	7	31	3	3	20	...	S. 26 13 W.	.329		
No. of miles.	Summer	4	2	4	41	86	26	16	105	...	S. 54 6 W.	.323		
	Autumn	87	61	26	119	148	139	0	758	...	N. 55 5 W.	.438		
	Winter	26	0	20	40	118	18	31	224	...	N. 80 38 W.	.327		
M'n vel. in miles p.h'r.	Summer	4.00	2.00	4.00	13.67	3.91	8.67	8.00	6.56					
	Autumn	12.43	15.25	8.67	6.61	5.92	9.27	.00	11.48					
	Winter	8.67	.00	5.00	5.71	3.81	6.00	10.33	11.20					
70. Aggregate number of observations at all stations. Surface wind.	Spring	137	271	145	441	145	156	129	676	46	N. 16 03 W.	.12		
	Summer	83	128	126	603	302	137	76	321	21	S. 29 47 E.	.27		
	Autumn	97	67	32	350	165	146	96	517	16	S. 88 37 W.	.16		
	Winter	83	156	41	386	131	196	133	713	9	S. 54 29 W.	.23½		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 8 26 W.	.11		
Motion of clouds.	Spring	31	47	19	77	23	59	56	287	...	N. 52 47 W.	.41		
	Summer	43	41	38	176	79	185	131	199	...	S. 60 4 W.	.27		
	Autumn	44	15	60	105	29	31	33	124	...	N. 7 29 E.	.04		
	Winter	31	14	3	32	24	45	42	211	...	N. 59 14 W.	.54		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 67 29 W.	.28		
2 preceding combined.	Spring	168	318	164	518	168	215	185	963	46	N. 34 9 W.	.17	N. 7½° E.	.12½
	Summer	126	169	164	779	381	322	207	520	21	S. 3 21 E.	.20½	S. 29 E.	.25
	Autumn	141	82	92	455	194	177	129	641	16	N. 87 15 W.	.12	S. 36 W.	.01½
	Winter	114	170	44	418	155	241	175	924	9	N. 63 41 W.	.26½	N. 50½ W.	.16
	The year[2]	...	...	...	...	...	...	...	...	...	N. 81 57 W.	.11½		

[1] From this table we obtain the following summary of results:—

	Spring.	Autumn.	Winter.
Average velocity of all winds in miles per hour	5.80	9.70	6.72
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.08	2.78	2.21
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above .	1.87	4.25	2.20
Excess of the latter over the former	—.21	+1.47	—.01

[2] Computed from the resultants for the seasons.

(Nos. 71 and 72.) **Southwestern Iowa.**

Observed at the following places, viz.:—

Clarinda, by S. H. Kridelbaugh, M.D., during January and December, 1865, and February, 1866.

Fontanelle, by A. F. Bryant, for an aggregate period of over 3½ years, in the years 1866 to 1869 inclusive.

Fort Croghan, by post surgeons, during nine months of the year 1843.

St. Mary's, by D. E. Read, for an aggregate period of six months in the years 1853 and 1854.

Whitesboro, by David K. Witter, from December, 1867, to April, 1868, inclusive.

Woodbine, by H. Wady, from May to September inclusive, in the year 1868.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
71. Surface wind at St. Mary's in Jan. and Feb. 1854.[1]	No. of observat'ns.	Winter	34	0	17	20	5	7	1	7	...	N. 53° 43′ E.	.190		
	No. of miles.	Winter	114	0	132	361	26	22	2	14	...	S. 64 20 E.	.409		
	Mean velocity.	Winter	3.35	0	7.76	18.05	5.20	3.14	2.00	2.00					
72. Aggregate number of observations at all stations.	Surface wind.	Spring	191	166	132	171	200	155	84	238	109	N. 10 19 E.	.03		
		Summer	92	77	129	232	484	194	90	131	175	S. 2 54 E.	.34		
		Autumn	101	56	34	116	307	112	73	250	173	S. 48 57 W.	.19		
		Winter	222	115	95	179	258	164	140	316	183	N. 81 33 W.	.11		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 28 25 W.	.12		
	Motion of clouds.	Spring	29	27	42	20	40	45	63	51	0	S. 88 8 W.	.17½		
		Summer	25	17	9	37	85	94	47	55	0	S. 45 57 W.	.40		
		Autumn	16	7	9	6	36	33	22	58	0	S. 88 38 W.	.36½		
		Winter	22	17	14	17	22	48	65	61	0	N. 84 57 W.	.39		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 78 7 W.	.31		
	Two preceding combined.	Spring	220	193	174	191	240	200	147	289	109	N. 46 48 W.	.04	N. 28° E.	.14
		Summer	117	94	138	269	569	288	137	186	175	S. 6 49 W.	.33	S. 14 E.	.24
		Autumn	117	63	43	122	343	145	95	308	173	S. 57 45 W.	.20	S. 82½ W.	.07
		Winter	244	132	109	196	280	212	205	377	183	N. 82 48 W.	.15	N. 25 W.	.12½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 44 7 W.	.14		

[1] From this table we obtain the following summary of results:—

	Winter.
Average velocity of all winds in miles per hour	7.37
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.40
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table	3.02
Excess of the latter over the former	+1.62

[2] Computed from the resultants for the seasons.

(Nos. 73 to 77.) **Minnesota,** south of latitude 45°.

Observed at the following places, viz.:—

Afton, by Dr. B. F. Babcock, for an aggregate period of 34 months, in the years 1865, 1866, 1867 and 1869.

Bowles Creek, by Andrew Stouffer, during the month of December, 1865.

Chatfield, by T. F. Thickstun, for an aggregate period of 13 months, in the years 1860 and 1861.

Danville, by Thomas A. Kellett, during five months of the year 1868.

Fort Ridgely, by post surgeons, for an aggregate period of nearly 13 years, in the years 1853 to 1867 inclusive.

Fort Snelling, by post surgeons, for an aggregate period of over 37½ years, in the years 1822, 1824 to 1858, and 1867 to 1869, both inclusive.

(Nos. 73 to 77.) **Minnesota.**—*Continued.*

Hastings, by T. F. Thickstun, from June, 1861, to May, 1862, inclusive.

Mankato, by William Kilgore, during the month of August, 1864.

Minneapolis, by William Cheney, for an aggregate period of over five years, from November, 1864, to December, 1869, inclusive.

New Ulm, by Charles Roos, from February, 1864, to December, 1869, inclusive.

Pajutazee, by Rev. S. R. Riggs, for an aggregate period of 24 months, in the years 1860, 1861 and 1862.

Red Wing, by Rev. Jabez Brooks, during the months of November and December, 1855, and April, 1856; and by A. M. Stephens, during the first eight months of the year 1867.

Rochester, by Alfred Milmine, during the first three months of the year 1869.

St. Paul, by Rev. A. B. Patterson, for an aggregate period of nearly 7½ years, in the years 1861 to 1869 inclusive; and by J. M. Heimstreet, from October, 1866, to January, 1867, inclusive.

Sibley, by C. W. and C. E. Woodward, for an aggregate period of over 5½ years, in the years 1865 to 1869 inclusive.

Source of the Des Moines, by Nicollet.

Travers des Sioux, by Rev. R. Hopkins, during the months of March and April, 1851.

Wabashaw, by Spenser L. Hillier, during the month of December, 1857.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E or between N.& E.	East.	S. E. or between S. & E.	South.	S. W. or between S.& W.	West.	N. W. or between N.&W.	Calm or variable.			Direction.	Force.	
73. Fort Ridgely.	January	34	78	113	194	68	103	269	364	...	....	...	....	...	403
	February	43	59	92	162	71	122	188	381	...	....	...	....	...	367
	March	64	70	109	180	79	75	215	436	...	....	...	....	...	403
	April	73	88	137	160	92	77	155	310	...	....	...	....	...	360
	May	102	100	177	199	80	67	160	224	...	....	...	....	...	403
	June	61	68	143	193	103	88	167	156	...	....	...	....	...	330
	July	65	71	153	174	142	95	142	155	...	....	...	....	...	372
	August	104	99	156	226	168	132	177	153	...	....	...	....	...	403
	September	119	105	172	224	123	114	191	188	...	....	...	....	...	409
	October	105	109	127	210	108	105	194	354	...	....	...	....	...	434
	November	53	70	111	170	74	111	272	320	...	....	...	....	...	441
	December	58	62	81	245	97	112	259	390	...	....	...	....	...	434
	Spring	239	258	423	539	251	219	530	970	...	N. 50° 11′ W.	.15	....	...	1166
	Summer	230	238	452	593	413	315	486	464	...	S. 0 29 E.	.10	....	...	1105
	Autumn	277	284	410	604	305	330	657	862	...	N. 75 13 W.	.13	....	...	1284
	Winter	135	199	286	601	236	337	716	1135	...	N. 78 45 W.	.25	....	...	1204
	The year[3]	...	...	...	...	...	...	...	...	...	N. 81 31 W.	.12	....	...	4759
74. Source of the Des Moines.[1]	The year	...	...	...	...	...	...	...	...	...	Northwest.				
75. Southwestern Minnesota.[2] Surface wind.	Spring	527	605	710	984	554	436	900	1843	48	N. 44° 5′ W.	.15	N. 4° E.	.10	1810
	Summer	493	495	710	1246	1041	524	781	988	18	S. 6 54 E.	.12	S. 45 E.	.17	1657
	Autumn	497	453	521	1200	808	519	996	1630	15	S. 86 17 W.	.12½	S. 45½ W.	.02	1830
	Winter	274	385	467	1005	556	548	1162	1904	25	N. 80 38 W.	.23	S. 74½ E.	.12	1715
	The year[3]	...	...	...	...	...	...	...	...	...	N. 87 55 W.	.11	....	...	7012
Motion of clouds.	Spring	78	54	35	44	74	89	259	224	...	N. 74 11 W.	.45½	N. 62 E.	.10	583
	Summer	76	42	79	80	167	117	396	203	...	S. 82 53 W.	.40	S. 45½ E.	.17	521
	Autumn	45	32	13	33	81	109	293	225	...	N. 84 30 W.	.57	S. 67 W.	.05	516
	Winter	28	6	6	21	14	41	245	165	...	N. 76 1 W.	.72	N. 60½ W.	.20	423
	The year[3]	...	...	...	...	...	...	...	...	...	N. 81 46 W.	.53	....	...	2043
2 preceding combined.	Spring	605	659	745	1028	628	525	1159	2067	48	N. 52 46 W.	.18	N. 8 E.	.10	1810
	Summer	569	537	789	1326	1208	641	1177	1191	18	S. 24 23 W.	.12	S. 41½ E.	.16	1657
	Autumn	542	485	534	1233	889	628	1289	1855	15	S. 89 38 W.	.17½	S. 51 W.	.02	1830
	Winter	302	391	473	1026	570	589	1407	2069	25	N. 79 42 W.	.27	N. 72 W.	.12	1715
	The year[3]	...	...	...	...	...	...	...	...	...	N. 85 44 W.	.15½	....	...	7012

[1] "Whenever a bend, an angle, or some prominent bluff is more exposed to the fury of *northwest winds*, that blow violently *a great part of the year*," etc.

[2] Danville, Fort Ridgely, New Ulm, Pajutazee and Sibley. [3] Computed from the resultants for the seasons.

(Nos. 76 and 77.) **Minnesota.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
76. Fort Snelling.	January	190	183	139	466	262	483	311	476	...	....	...	....	...	1178
	February	150	169	135	356	233	468	324	483	...	....	...	....	...	1046
	March	191	193	148	442	380	436	330	536	...	....	...	....	...	1147
	April	247	264	191	413	260	375	309	422	...	....	...	....	...	1140
	May	230	358	266	380	296	383	299	349	...	....	...	....	...	1178
	June	208	207	189	479	383	463	235	296	...	....	...	....	...	1110
	July	175	239	158	538	460	443	306	320	...	....	...	....	...	1178
	August	236	227	178	550	510	407	254	339	...	....	...	....	...	1178
	September	186	232	104	541	409	433	263	398	...	....	...	....	...	1110
	October	191	210	125	488	360	524	347	410	...	....	...	....	...	1178
	November	202	204	150	435	265	417	363	516	...	....	...	....	...	1140
	December	192	182	154	510	271	470	307	561	...	....	...	....	...	1147
	Spring	668	815	605	1235	936	1194	938	1307	...	S. 53° 21′ W.	.10½	....	...	3465
	Summer	619	673	525	1567	1353	1313	795	955	...	S. 10 6 W.	.21	....	...	3466
	Autumn	579	646	379	1464	1034	1374	973	1324	...	S. 43 22 W.	.19	....	...	3428
	Winter	532	534	428	1332	766	1421	942	1520	...	S. 60 15 W.	.20	....	...	3371
	The year[2]	...	...	...	...	...	...	...	...	...	S. 39 35 W.	.13½	....	...	13730
77. Southeastern Minnesota.[1] Surface wind.	Spring	1286	1287	920	1859	1594	1679	1629	2262	180	S. 76 43 W.	.10	N. 6° E.	.07	4232
	Summer	1104	1029	902	2768	2389	1947	1485	1548	244	S. 7 32 W.	.21½	S. 35 E.	.13	4355
	Autumn	1101	931	624	2102	1928	1859	1601	2118	177	S. 48 12 W.	.18	S. 66½ W.	.03	4308
	Winter	1022	817	723	2023	1540	1938	1755	2543	214	S. 66 44 W.	.18	N. 59 W.	.07	4184
	The year[2]	...	...	...	...	...	...	...	...	...	S. 44 40 W.	.15	....	...	17079
Motion of clouds.	Spring	68	45	43	46	64	104	215	159	...	N. 81 50 W.	.40	N. 66½ E.	.06	705
	Summer	38	25	28	43	76	135	319	132	...	S. 83 1 W.	.55	S. 30 W.	.09	828
	Autumn	62	11	15	36	70	79	228	120	...	S. 89 24 W.	.51½	S. 36 W.	.01	789
	Winter	26	27	23	24	32	75	226	123	...	N. 84 24 W.	.55½	N. 49 W.	.07	751
	The year[2]	...	...	...	...	...	...	...	...	...	N. 88 51 W.	.50	....	...	3073
2 preceding combined.	Spring	1354	1332	963	1905	1658	1783	1844	2421	180	S. 80 38 W.	.12	N. 8 E.	.08	4232
	Summer	1142	1054	930	2811	2465	2082	1804	1680	244	S. 15 42 W.	.21	S. 36 E.	.12½	4355
	Autumn	1163	942	639	2138	1998	1938	1829	2238	177	S. 53 14 W.	.19	S. 63½ W.	.02½	4308
	Winter	1048	844	746	2047	1572	2013	1981	2666	214	S. 69 57 W.	.20½	N. 62½ W.	.07	4184
	The year[2]	...	...	...	...	...	...	...	...	...	S. 51 48 W.	.16	....	...	17079

[1] Afton, Bowles Creek, Chatfield, Fort Snelling, Hastings, Mankato, Minneapolis, Red Wing, Rochester, St. Paul, Travers des Sioux and Wabashaw. [2] Computed from the resultants for the seasons.

(Nos. 78 to 80.) **Northern Iowa.**

Observed at the following places, viz.:—

Algona, by F. McCoy and Miss Elizabeth McCoy, for an aggregate period of $3\frac{3}{4}$ years, in the years 1861 to 1865 inclusive; and by James H. Warren, from April, 1867, to December, 1869, inclusive; also by Philip Dorweiler, at a point ten miles southwest of Algona, for an aggregate period of over three years, in the years 1866 to 1869 inclusive.

Ames, by J. M. Cotton, during the month of September, 1869.

Bangor, by Isaac M. Gidley, for an aggregate period of 8 months in the years 1861 and 1863.

Boonsboro, by E. Babcock, for an aggregate period of 21 months, in the years 1867, 1868 and 1869.

Border Plains, by G. C. and W. K. Goss, for an aggregate period of $2\frac{1}{2}$ years, in the years 1856, 1857 and 1858.

Dakota, by William O. Atkinson, from October, 1867, to March, 1868, inclusive.

Fort Dodge, by post surgeons, for an aggregate period of 22 months in the years 1851, 1852 and 1853; and by C. N. Jorgenson, from March, 1867, to March, 1869, inclusive.

Iowa Falls, by Nathan Townsend, from November, 1863, to December, 1869, inclusive, except the month of February, 1868.

Marble Rock, by H. Wadey, for an aggregate period of 28 months in the years 1867, 1868 and 1869.

Mineral Ridge, by J. T. Sullivan, during the last seven months of the year 1869.

Osage, by Rev. Alva Bush, from April, 1866, to February, 1867.

(Nos. 78 to 80.) **Northern Iowa.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
78. Fort Dodge.[1]		January	41	15	10	28	30	75	27	193	1				
		February	26	15	20	45	35	51	26	167	0				
		March	69	24	46	73	27	55	26	163	0				
		April	31	91	37	36	9	49	33	136	0				
		May	69	49	46	81	19	42	27	90	2				
		June	33	28	16	30	57	61	14	52	0				
		July	32	35	5	31	45	102	11	39	2				
		August	33	47	33	71	98	60	43	49	0				
		September	33	25	11	52	59	106	17	93	0				
		October	25	46	11	56	65	88	31	87	0				
		November	31	50	27	20	54	42	19	142	0				
		December	35	36	28	47	25	52	33	168	0				
		Spring	169	164	129	190	55	146	86	389	2	N. 17° 38′ W.	.21		
		Summer	98	110	54	132	200	223	68	140	2	S. 29 28 W.	.20		
		Autumn	89	121	49	128	178	236	67	322	0	S. 82 1 W.	.20		
		Winter	102	66	58	120	90	178	86	518	0	N. 60 41 W.	.37		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 75 8 W.	.17½		
79. Surface wind at Border Plains in the years 1856 and 1857.[2]	No. of observat'ns.	Spring	44	17	8	42	55	15	13	81	...	N. 60 0 W.	.131		
		Summer	64	12	14	108	125	37	18	81	...	S. 1 31 W.	.212		
		Autumn	61	15	23	85	162	25	37	125	...	S. 31 44 W.	.175		
		Winter	52	32	13	64	48	23	27	98	...	N. 42 39 W.	.129		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 56 3 W.	.090		
	No. of miles.	Spring	366	96	18	433	427	125	135	1101	...	N. 57 21 W.	.268		
		Summer	311	50	132	921	663	288	83	607	...	S. 7 53 E.	.243		
		Autumn	468	157	349	801	2045	236	560	1944	...	S. 52 31 W.	.205		
		Winter	369	537	146	522	321	233	333	1315	...	N. 32 54 W.	.255		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 84 17 W.	.139		
	M'n vel. in miles p.h'r.	Spring	8.32	5.65	2.25	10 31	7.76	8.33	10.38	135.9					
		Summer	4.86	4.17	9.43	8.53	5.30	7.78	4.61	75.0					
		Autumn	7.67	10.47	15.17	9.42	12.62	9.44	15.14	15.55					
		Winter	7.10	16.78	11.23	8.16	6.69	10.13	12.33	13.42					
		The year													
80. Aggregate number of observations at all stations.	Surface winds.	Spring	658	720	494	1172	624	617	473	2067	229	N. 37 8 W.	.13		
		Summer	455	455	381	1631	1349	1013	507	1231	698	S. 8 36 W.	.20½		
		Autumn	489	418	301	1320	1444	1110	723	2601	338	S. 73 29 W.	.22		
		Winter	514	508	243	1130	960	921	756	2649	198	N. 79 51 W.	.24		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 78 8 W.	.14		
	Motion of clouds.	Spring	130	131	69	260	188	308	474	648	...	N. 83 32 W.	.37		
		Summer	127	92	58	343	342	330	558	413	...	S. 65 3 W.	.35		
		Autumn	115	100	48	259	311	354	512	747	...	N. 89 24 W.	.40½		
		Winter	91	138	36	244	224	251	467	614	...	N. 87 26 W.	.37½		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 88 23 W.	.36½		
	2 preceding combined.	Spring	788	851	563	1432	812	925	947	2715	229	N. 57 32 W.	.17	N. 22° E.	.13
		Summer	582	547	439	1974	1691	1343	1065	1644	698	S. 26 47 W.	.21	S. 31 E.	.18½
		Autumn	604	518	349	1579	1755	1464	1235	3348	338	S. 78 32 W.	.26	S. 67½ W.	.07
		Winter	605	646	279	1374	1184	1172	1223	3263	198	N. 81 45 W.	.27	N. 49 W.	.10
		The year[3]	...	...	...	...	...	...	...	...	...	S. 81 41 W.	.19		

[1] Surface winds and motion of clouds combined in April and May, 1867, and January, 1868.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.82	6.66	12.31	10.58	9.84
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.29	1.41	2.15	1.36	.89
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.63	1.62	2.52	2.70	1.37
Excess of the latter over the former	+1.34	+.21	+.37	+1.34	+.48

[3] Computed from the resultants for the seasons.

(Nos. 81 to 83.) **Southern Iowa, and Missouri** north of latitude 40°.

Observed at the following places, viz.:—

Athens, Missouri, by John T. Caldwell, for an aggregate period of 29 months, in the years 1863 to 1866 inclusive.

Bethany, Missouri, by D. J. Heaston, during the months of January, February, May and June, in the year 1860.

Canton, Missouri, by George P. Ray, for an aggregate period of nearly six years, in the years 1862 to 1868 inclusive; also by J. M. Parker, during the month of April, 1868.

Centreville,[1] Iowa, by Rev. John C. Clyde, at the request of the author, from January to June inclusive, in the year 1870.

Des Moines, Iowa, by Rev. J. A. Nash, for an aggregate period of 20 months, in the years 1865, 1866 and 1867.

Edinburgh, Missouri, by John E. Vertrees, from September, 1866, to January, 1867, inclusive.

Fort Des Moines, Iowa, by post surgeons, for an aggregate period of 26 months, in the years 1843 to 1846 inclusive.

Kirksville, Missouri, by Robert Byers, for an aggregate period of 22 months, in the years 1860, 1861 and 1862.

Lancaster, Missouri, by John M. Wethersford, from June to November inclusive, in the year 1859.

Luray, Missouri, by B. P. Hannan, from June to October inclusive, in the year 1859.

Newton, Iowa, by A. Failor, during the last five months of the year 1869.

Pella, Iowa, by E. H. A. Scheeper, for an aggregate period of 21 months in the years 1854, 1855 and 1856.

Trenton, Missouri, by Thomas J. Conkling, during the month of August, 1859.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultan to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
81. Fort Des Moines.	Spring	90	46	74	28	97	153	167	81	...	S. 77° 38′ W.	.29	....	...	184
	Summer	69	24	113	56	109	73	181	89	...	S. 67 50 W.	.19	....	...	184
	Autumn	97	16	100	49	119	58	187	162	...	N. 81 50 W.	.25	....	...	211
	Winter	118	45	109	42	46	63	155	99	...	N. 44 25 W.	.21	....	...	180
	The year[2]	...	...	...	...	...	...	...	...	...	N. 86 38 W.	.21½	....	...	759
82. Southern Iowa. Surface wind.	Spring	147	96	137	146	278	213	296	243	0	S. 64 56 W.	.22	....	...	400
	Summer	130	76	178	180	426	178	304	209	22	S. 32 10 W.	.24	....	...	491
	Autumn	260	111	157	308	500	266	396	590	78	S. 74 40 W.	.21½	....	...	696
	Winter	162	119	170	143	213	162	382	408	0	N. 76 39 W.	.25	....	...	544
	The year[2]	...	...	...	...	...	...	...	...	...	S. 69 16 W.	.21	....	...	2131
82. Southern Iowa. Motion of clouds.	Spring	6	6	1	6	8	6	6	18	...	N. 64 18 W.	.26	....	...	122
	Summer	0	11	8	29	3	31	29	23	...	S. 55 19 W.	.28	....	...	184
	Autumn	17	29	8	29	16	68	96	84	...	N. 85 27 W.	.44½	....	...	303
	Winter	3	18	23	11	4	8	11	34	...	N. 7 10 E.	.20	....	...	211
	The year[2]	...	...	...	...	...	...	...	...	...	N. 77 55 W.	.23	....	...	820
82. Southern Iowa. 2 preceding combined.	Spring	153	102	138	152	286	219	302	261	0	S. 66 49 W.	.22	S. 4° W.	.02	400
	Summer	130	87	186	209	429	209	333	232	22	S. 34 4 W.	.24	S. 27 E.	.15	491
	Autumn	277	140	165	337	516	334	492	674	78	S. 78 54 W.	.24	N. 58 W.	.04½	696
	Winter	165	137	193	154	217	170	393	442	0	N. 74 57 W.	.24	N. 13 W.	.13½	544
	The year[2]	...	...	...	...	...	...	...	...	...	S. 71 11 W.	.21	....	...	2131

[1] The observations at this place, being made with extreme accuracy, by means of a vane which marked single degrees of azimuth, do not admit of tabulation in the usual form. The monthly resultants are as follows, viz.:—

	January	February.	March.	April.	May.	June.
Direction of resultant . .	N. 87° 37′ W.	S. 84° 17′ W.	N. 49° 58′ W.	N. 19° 45′ W.	S. 17° 34′ W.	S. 27° 45′ W.
Ratio of do. to sum of winds	.51	.19	.17	.06	.26	.15

[2] Computed from the resultants for the seasons.

(No. 83.) **Southern Iowa and Northern Missouri.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
83. Northern Missouri. Surface wind.	Spring	222	383	177	491	342	456	158	743	118	N. 88° 47′ W.	.10	....	...	798
	Summer	245	349	211	572	558	606	124	432	291	S. 0 25 E.	.17½	....	...	1012
	Autumn	161	177	115	352	269	433	160	488	258	S. 59 6 W.	.16	....	...	789
	Winter	234	321	131	409	377	498	241	718	176	S. 31 39 W.	.15	....	...	810
	The year[1]	...	...	...	...	...	...	...	...	...	S. 39 14 W.	.12	....	...	3409
Motion of clouds.	Spring	91	100	102	118	105	306	135	339	...	S. 89 11 W.	.18	....	...	768
	Summer	67	116	102	189	171	389	161	252	...	S. 49 37 W.	.27	....	...	766
	Autumn	27	47	37	65	39	163	100	144	...	S. 79 15 W.	.33	....	...	637
	Winter	68	55	48	57	81	130	132	224	...	N. 78 28 W.	.33	....	...	567
	The year[1]	...	...	...	...	...	...	...	...	...	S. 80 34 W.	.26	....	...	2738
2 preceding combined.	Spring	313	483	279	609	447	762	293	1082	181	N. 89 40 W.	.12	N. 87½° E.	.06½	798
	Summer	312	465	313	761	729	995	285	684	291	S. 19 3 W.	.18½	S. 33 E.	.13½	1012
	Autumn	188	224	152	417	308	596	260	632	258	S. 66 11 W.	.19	S. 71 W.	.04½	789
	Winter	302	376	179	466	458	628	373	942	176	N. 89 48 W.	.18	N. 36 W.	.08	810
	The year[1]	...	...	...	...	...	...	...	...	...	S. 65 10 W.	.15	....	...	3409

[1] Computed from the resultants for the seasons.

(No. 83½.) **Southeastern Minnesota and Western Wisconsin.**

Reported to the Smithsonian Institution, from the following places, viz.:—

Cascade Valley, Wisconsin, by Samuel R. Seibert, for the month of May, 1856.

Prescott, Wisconsin, by Rev. Spencer L. Hillier, for the months of January, February and March, 1857.

Red Wing, Minnesota, by Rev. Jabez Brooks, for the months of November and December, 1855, and April, 1856.

Wabashaw, Minnesota, by Rev. Spencer L. Hillier, for the month of December, 1857.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
No. of observations.	Spring	19	10	23	36	41	9	22	23	......	S. 19° 16′ E.	.163
	Autumn	6	3	18	6	5	3	19	23	......	N. 45 0 W.	.219
	Winter	17	27	24	35	33	58	47	45	......	S. 59 19 W.	.170
No. of miles.	Spring	124	144	148	349	161	59	146	346	......	N. 71 55 E.	.041
	Autumn	35	8	156	47	53	18	162	166	......	N. 58 43 W.	.174
	Winter	139	150	94	90	115	199	353	175	......	N. 82 3 W.	.218
Mean vel. in miles per hour.	Spring	6.53	14.40	6.43	9.69	3.93	6.56	6.64	15.04	......		
	Autumn	5.83	2.67	8.67	7.83	10.60	6.00	8.53	7.22	......		
	Winter	8.18	5.56	3.92	2.57	3.48	3.43	7.51	3.89	......		

From the foregoing table we obtain the following summary of results:—

	Spring.	Autumn.	Winter.
Average velocity of all winds in miles per hour	8.07	7.77	4.60
Velocity in mean direction on the supposition th the winds from every point of the compass move with the foregoing average velocity	1.32	1.70	.78
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table . .	.33	1.35	1.00
Excess of the latter over the former	—.99	—.35	+.22

(Nos. 84 to 86.) **Western and Central Wisconsin.**

Observed at the following places, viz.:—

Cascade Valley, by Samuel R. Seibert, during the month of May, 1856.

Galesville, by William Gale, during the months of June, July, and August, 1867.

Mosinee, by J. S. Pashley, during the months of January and February, 1859.

New Danemora, by Emil Hauser, during the months of April, May, and June, 1859.

Prescott, by Rev. Spencer L. Hillier, during the months of January, February, and March, 1857.

Wausau, by W. A. Gordon, M.D., during the year 1859.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
84. Surface wind.	Spring	29	42	48	71	54	68	70	59	29	S. 31° 35′ W.	.13	....	...	215
	Summer	35	6	5	5	45	82	169	76	135	S. 87 6 W.	.48	....	...	276
	Autumn	59	6	13	37	37	20	15	37	49	N. 44 32 E.	.06	....	...	91
	Winter	84	46	17	71	76	112	58	96	60	S. 78 44 W.	.17½	....	...	208
	The year[1]	...	...	...	...	...	...	...	...	...	S. 79 35 W.	.17	....	...	790
85. Motion of clouds.	Spring	10	6	14	7	6	12	29	9	...	N. 86 46 W.	.22	....	...	123
	Summer	19	9	5	6	7	10	84	17	...	N. 77 41 W.	.57	....	...	92
	Autumn	11	2	2	13	21	45	51	49	...	S. 81 52 W.	.54½	....	...	91
	Winter	52	23	5	24	16	52	18	23	...	N. 65 29 W.	.17	....	...	151
	The year[1]	...	...	...	...	...	...	...	...	...	N. 85 5 W.	.37	....	...	457
86. Two preceding combined.	Spring	39	48	62	78	60	80	99	68	29	S. 45 57 W.	.13	S. 67° E.	.17	215
	Summer	54	15	10	11	52	92	253	93	135	N. 89 6 W.	.50	N. 82½ W.	.25	276
	Autumn	70	8	15	50	58	65	66	86	49	S. 88 36 W.	.25	N. 8 E.	.02	91
	Winter	136	69	22	95	92	164	76	119	60	S. 87 26 W.	.16½	N. 79 E.	.09	208
	The year[1]	...	...	...	...	...	...	...	...	...	S. 84 37 W.	.25	....	...	790

[1] Computed from the resultants for the seasons.

(Nos. 87 to 89.) **Northeastern Iowa.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date and remarks.
Bellevue,	John C. Forey,	3	6	1856 to 1860 inclusive.
Bowen's Prairie,	Samuel Woodworth,	2	1	1853, 1868 and 1869.
Ceres,	John M. Hagensick,	2	1	1865, 1866 and 1867.
Dubuque,	Dr. Asa Horr,	14	11	1854 to 1859 and 1861 to 1869 both inclusive.
Fayette,	John M. McKenzie,	0	11	1860.
Forestville,	Daniel Sheldon,	2	8	1860 to 1863 inclusive.
Fort Atkinson,	Post Surgeons,	5	6	1841 to 1846 inclusive.
Franklin,	D. and W. W. Beal and Miss C. Beal,	3	3	1856, 1857, 1860, 1861 and 1862.
Guttenberg,	James P. Dickinson,	5	0	1864 to 1869 inclusive.
Hesper,	H. B. Williams,	0	9	1860 and 1861.
Independence,	D. S. Deering and others,[1]	10	0	1862 to 1869 inclusive ; two sets of observations in some of the years.
Manchester,	Allen Mead,	1	4	1865 and 1866.
Maquoketa,	Edward F. Hobart,	0	3	1857.
Monticello,	C. Mead and M. M. Moulton,	5	2	1864 to 1869 inclusive.
Poultney,	Dr. B. F. Odell,	2	2	1854, 1855 and 1856.
Quasqueton,	Dr. E. C. Bidwell,	2	2	1854, 1855 and 1856.
Rossville,	C. D. Beaman,	1	1	1857 and 1859.
Turkey River,	....	0	1	May, 1844.
Vernon Springs,	G. Marshall,	1	2	1861, 1862 and 1863.
Vinton,	James Wood,	0	9	1869.
Washington,	C. R. Boyle,	0	2	1861.
Waterloo,	T. Steed,	3	3	1860 to 1864 inclusive.
Waukon,	E. M. Hancock,	0	9	1869.
West Union,	F. McClintock,	0	6	1869.

[1] Alexander C. Wheaton, Mrs. D. D. Wheaton and George Warne, M.D.

(Nos. 87 to 89.) **Northeastern Iowa.**—*Continued.*

Place and kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
87. Fort Atkinson.		Spring	281	211	176	212	244	287	264	505	...	N. 61° 22′ W.	.18	S. 86° E.	.08
		Summer	112	116	87	138	198	302	330	467	...	N. 88 34 W.	.35	S. 54 W.	.14
		Autumn	217	135	124	116	222	241	301	444	...	N. 72 34 W.	.28	S. 81 W.	.03
		Winter	332	177	170	172	214	157	277	497	...	N. 38 59 W.	.23½	N. 43 E.	.13
		The year[2]	...	...	...	...	...	...	...	...	...	N. 68 52 W.	.25		
88. Surface wind at Smithsonian Stations in 1854, 1855, 1856 & 1857.[1]	No. of observations.	Spring	189	218	165	333	280	327	356	472	...	S. 79 13 W.	.150		
		Summer	144	198	90	251	405	410	223	285	...	S. 38 26 W.	.209		
		Autumn	216	162	72	254	333	358	282	428	...	S. 74 36 W.	.207		
		Winter	321	218	132	280	219	318	340	629	...	N. 62 7 W.	.217		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 77 40 W.	.178		
	No. of miles.	Spring	2349	2508	1364	3314	2716	3324	3654	6385	...	N. 76 19 W.	.191		
		Summer	904	1262	396	1683	3496	3364	1575	2383	...	S. 41 25 W.	.269		
		Autumn	1953	1320	438	1818	2773	3574	2389	4861	...	S. 87 22 W.	.265		
		Winter	3592	2000	813	2049	1237	2618	3071	6881	...	N. 48 53 W.	.329		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 84 6 W.	.228		
	M'n vel. in miles p.h'r.	Spring	12.43	11.50	8.27	9.95	9.70	10.17	10.25	13.53					
		Summer	6.28	6.37	4.40	6.71	8.63	8.20	7.06	8.36					
		Autumn	9.04	8.15	6.08	7.16	8.33	9.98	8.47	11.36					
		Winter	11.19	9.17	6.16	7.32	5.65	8.23	9.03	10.94					
		The year													
89. Aggregate of all stations.	Surface wind.	Spring	1623	2218	1452	2769	1730	2081	2001	4280	1032	N. 55 11 W.	.09½		
		Summer	1343	1531	1142	2949	2853	3160	1964	3121	1544	S. 39 6 W.	.16½		
		Autumn	1537	1158	939	2446	2432	2515	2129	3997	1460	S. 76 52 W.	.18		
		Winter	1577	1419	899	2305	1798	2181	2302	4691	1276	N. 75 40 W.	.20		
		The year	6080	6326	4432	10469	8813	9947	8396	16089	5312	S. 82 50 W.	.14		
	Motion of clouds.	Spring	383	298	221	333	288	699	1203	1258	...	N. 76 22 W.	.42		
		Summer	377	316	189	319	370	1061	1626	1431	...	N. 84 28 W.	.48½		
		Autumn	341	206	136	329	326	746	1214	1257	...	N. 82 13 W.	.47		
		Winter	236	182	104	222	183	473	1083	940	...	N. 78 9 W.	.50½		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 80 22 W.	.47		
	2 preceding combined.	Spring	2006	2516	1673	3102	2018	2780	3204	5538	1032	N. 66 13 W.	.16	N. 42½ E.	.08
		Summer	1720	1847	1331	3268	3223	4221	3590	4552	1544	S. 64 52 W.	.21	S. 8 E.	.09
		Autumn	1878	1364	1075	2775	2758	3261	3343	5254	1460	S. 85 0 W.	.23	S. 48 W.	.03½
		Winter	1813	1601	1003	2527	1981	2654	3385	5631	1276	N 76 27 W.	.25	N. 36½ W.	.07
		The year[2]	...	...	...	...	...	...	...	...	...	N. 89 5 W.	.20		

(Relative Prevalence of Winds from the Different Points of the Compass.)

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.95	7.51	9.05	9.06	9.14
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.64	1.57	1.87	1.97	1.63
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.09	2.02	2.40	2.98	2.09
Excess of the latter over the former	+.45	+.45	+.53	+1.01	+.46

[2] Computed from the resultants for the seasons.

(Nos. 90 and 91.) **Southeastern Iowa.**

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date and remarks.
Atalissa,	B. Carpenter,	0	4	March to May inclusive, 1867.
Burlington,	Louisa P. Love and Mrs. James Love,	0	10	1860, 1866, 1867 and 1868.
Camanche,	....	0	2	December, 1856, and December, 1857.
Clinton,	N. H. Parker and P. J. Farnsworth,	4	3	1856 and 1865 to 1869 inclusive.
Davenport,	J. Chamberlain and others,[2]	9	2	1860 to 1869 inclusive; two or more sets of observations in some years.
Fairfield,	J. M. Shaffer,	2	9	1857, 1858, 1859 and 1869.
Fort Madison,	Daniel McCready,	16	0	1854 to 1869 inclusive.
Iowa City,	— Murray and Prof. T. S. Parvin and others,[3]	10	9	1839, 1840, 1856 to 1858 and 1861 to 1869 both inclusive.
Keokuk,	Miss Ida E. Ball and others,[4]	0	11	1853, 1854 and 1855.
Kossuth,	Isaiah Reed and Wm. P. Leonard,	0	11	1860, 1861 and 1862.
Lyons,	A. T. Hudson, M. D.,	7	0	1860 to 1867 inclusive.
Mount Pleasant,	E. L. Briggs,	0	9	1864 and 1865.
Mount Vernon,	Prof. Alonzo Collins,	1	5	1860 to 1863 inclusive.
Muscatine,[1]	T. S. Parvin and others,[5]	28	1	1841 to 1869 inclusive; two sets of observations during parts of the years 1860, 1861 and 1862.
Pleasant Plain,	T. McConnell,	9	5	1856 to 1865 inclusive.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
90. Surface wind at Smithsonian Stations,[6] in the years 1854, 1855, 1856 and 1857.[7]	No. of observations.	Spring	169	389	187	532	169	497	193	675	...	N. 82° 19′ W.	.064		
		Summer	127	323	111	668	278	781	242	387	...	S. 20 49 W.	.233		
		Autumn	108	296	110	624	231	714	228	662	...	S. 48 21 W.	.187		
		Winter	199	316	146	401	263	538	278	958	...	N. 75 48 W.	.219		
		The year[8]	...	...	...	...	...	...	...	..	...	S. 60 45 W.	.143		
	No. of miles.	Spring	1262	1998	1259	3127	1448	4100	1599	6446	...	N. 80 49 W.	.194		
		Summer	510	958	338	2397	1419	3637	1197	2139	...	S. 42 31 W.	.285		
		Autumn	815	1141	489	3023	1236	4077	1780	4864	...	S. 75 36 W.	.261		
		Winter	1856	1674	857	1709	1446	2570	2265	7747	...	N. 57 20 W.	.359		
		The year[8]	...	...	...	...	...	...	...	...	...	N. 87 58 W.	.236		
	M'n vel. in miles per hour.	Spring	7.47	5.14	6.73	5.88	8.57	8.25	8.28	9.55					
		Summer	4.02	2.97	3.05	3.59	5.10	4.66	4.95	5.53					
		Autumn	7.55	3.85	4.45	4.84	5.35	5.71	7.81	7.35					
		Winter	9.33	5.30	5.87	4.26	5.90	4.78	8.15	8.09					
91. Aggregate number of observations at all stations.	Surface wind.	Spring	1069	3264	1321	3522	1311	3894	2268	5631	755	N. 74 25 W.	.13		
		Summer	760	2542	864	4058	1985	5838	1566	3406	1030	S. 32 37 W.	.22		
		Autumn	741	2124	752	3173	1554	4766	1985	5196	934	S. 74 35 W.	.22		
		Winter	1033	2345	1000	2772	1818	4675	2787	6735	924	N. 86 37 W.	.26		
		The year[8]	...	...	...	...	...	...	...	...	...	S. 75 1 W.	.18½		
	Motion of clouds.	Spring	287	834	311	481	344	1908	1884	1863	...	N. 87 13 W.	.42		
		Summer	260	689	295	578	371	2345	2232	1222	...	S. 76 56 W.	.46		
		Autumn	279	546	263	379	246	1739	1510	1420	...	S. 88 30 W.	.44½		
		Winter	276	498	293	325	298	1440	1616	1408	...	N. 88 23 W.	.45		
		The year[8]	...	...	...	...	...	...	...	...	...	S. 87 26 W.	.44		
	Two receding combined.	Spring	1356	4098	1632	4003	1655	5802	4152	7494	755	N. 81 9 W.	.20	N. 31° E.	.08
		Summer	1020	3231	1159	4636	2356	8183	3798	4628	1030	S. 51 44 W.	.26	S. 17 E.	.12½
		Autumn	1020	2670	1015	3552	1800	6505	3495	6616	934	S. 79 47 W.	.27	S. 71½ W.	.02½
		Winter	1309	2843	1293	3097	2116	6115	4403	8143	924	N. 87 17 W.	.30	N. 44½ W.	.07½
		The year[8]	...	...	...	...	...	...	...	...	...	S. 80 26 W.	.24½		

[1] Formerly Bloomington. [2] Dr. Ignatius Langer, H. H. Belfield, W. P. Dunwoody and D. S. Sheldon.
[3] Herman H. Fairall and W. Reynolds. [4] Dr. J. E. Ball. [5] Rev. John Ufford, Suel Foster and Josiah P. Walton.
[6] Including Pella in Southern Iowa.
[7] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.56	4.32	5.86	6.49	6.05
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.48	1.01	1.10	1.42	.87
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.47	1.23	1.53	2.33	1.43
Excess of the latter over the former	+.99	+.22	+.43	+.91	+.56

[8] Computed from the results for the seasons.

(Nos. 92 and 93.) **Southwestern Wisconsin.**

Observed at the following places, viz. :—

Baraboo, by M. C. Waite, for an aggregate period of $5\frac{3}{4}$ years, in the years 1852 and 1864 to 1869 inclusive.

Bloomfield, see Geneva.

Geneva, by Wm. H. Whitney, for an aggregate period of 67 months, in the years 1863 to 1869 incl.

Kilbourn City, by James H. Bell, for an aggregate period of 14 months in the years 1861 and 1862.

New Lisbon, by John L. Dunegan, for an aggregate period of 28 months, in the years 1867, 1868, and 1869.

Prairie du Chien, by United States Army surgeons, at Fort Crawford, for an aggregate period of $16\frac{2}{3}$ years, in the years 1822, 1824, and 1831 to 1845 inclusive.

Platteville, by Dr. J. L. Pickard and A. K. Johnson, for an aggregate period of nearly six years in the years 1854 to 1859 inclusive.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
92. Prairie du Chien.	Spring	333	141	120	320	422	431	308	581	...	S. 79° 16′ W.	.22	S. 50° E.	.03	1564
	Summer	267	115	99	308	599	485	273	645	...	S. 62 8 W.	.27$\frac{1}{2}$	S. 2 W.	.10	1564
	Autumn	261	135	85	302	360	370	199	704	...	N. 88 4 W.	.23$\frac{1}{2}$	N. 5$\frac{1}{2}$ E.	.03	1424
	Winter	438	94	85	272	397	345	261	758	...	N. 74 44 W.	.27	N. 14 W.	.09	1504
	The year[1]	...	...	...	...	...	...	...	...	...	S. 85 2 W.	.24	....	...	6056
93. Aggregate number of observations at all stations. Surface wind.	Spring	631	568	639	920	756	900	1112	1410	56	S. 89 17 W.	.15	....	...	2760
	Summer	526	402	465	915	991	1206	882	1285	121	S. 58 15 W.	.22	....	...	2760
	Autumn	536	331	364	858	657	903	821	1467	88	S. 85 48 W.	.21$\frac{1}{2}$	....	...	2609
	Winter	735	374	390	708	685	910	1178	1568	90	N. 81 4 W.	.27	....	...	2704
	The year[1]	...	...	...	...	...	...	...	...	...	S. 83 46 W.	.20$\frac{1}{2}$	....	...	10833
Motion of clouds.	Spring	84	87	98	108	44	231	401	232	...	N. 86 59 W.	.38$\frac{1}{2}$	....	...	889
	Summer	58	56	61	97	48	276	285	238	...	S. 84 32 W.	.43	....	...	889
	Autumn	67	61	110	90	29	229	342	233	...	N. 87 26 W.	.40	....	...	637
	Winter	91	77	100	149	72	165	326	185	...	S. 86 45 W.	.27	....	...	778
	The year[1]	...	...	...	...	...	...	...	...	...	S. 89 18 W.	.37	....	...	3193
2 preceding combined.	Spring	715	655	737	1028	800	1131	1513	1642	56	N. 89 32 W.	.19	N. 64$\frac{1}{2}$ E.	.04$\frac{1}{2}$	2760
	Summer	584	458	526	1012	1039	1482	1167	1523	121	S. 64 38 W.	.24	S. 8$\frac{1}{2}$ E.	.08$\frac{1}{2}$	2760
	Autumn	603	392	474	948	686	1132	1163	1700	88	S. 87 32 W.	.24$\frac{1}{2}$	N. 55 W.	.02	2609
	Winter	826	451	490	857	757	1075	1504	1753	90	N. 82 52 W.	.27	N. 37$\frac{1}{2}$ W.	.06$\frac{1}{2}$	2704
	The year[1]	...	...	...	...	...	...	...	...	...	S. 85 12 W.	.23	....	...	10833

[1] Computed from the resultants for the seasons.

(Nos. 94 to 97.) **Eastern Wisconsin.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Appleton,	Prof. R. Z. Mason & others,[1]	6	7	1856 to 1861 and 1867 to 1869, both inclusive.
Bellefontaine,	Thomas Gay,	0	9	1854 and 1856.
Ceresco,	Miss M. E. Baker,	0	11	1854 and 1855.
Embarrass,	J. E. Breed,	5	11	1864 to 1869 inclusive.
Fort Howard,	Post Surgeon,	21	0	1822 to 1831, 1833 to 1840, and 1850 to 1852, all inclusive.
Fort Winnebago,	Post Surgeon,	12	7	1831, 1832 and 1835 to 1845 inclusive.
Green Bay,	F. Deckner,	1	9	1864 and 1865.
Green Lake,	C. F. Pomeroy,	0	11	1851.
Lind,	R. H. Struthers,	0	4	1857.
Lebanon,	J. C. Hicks,	0	2	May and July, 1864.
Manitowoc,	Jacob Lüps,	10	3	1857 to 1859, and 1861 to 1869, both inclusive.
Menasha,	Col. D. Underwood,	0	3	1857.
New Holstein,	F. Hachez,	0	2	November, 1864, and January, 1865.
New London,	J. E. Breed,	1	3	1854, 1856 and 1857.
Plymouth,	G. Moeller,	4	8	1865 to 1869 inclusive.
Rural,	R. H. Struthers,	0	3	First three months of 1865.
Waupaca,	J. E. Breed and others,[2]	6	6	1863 to 1869 inclusive.
Weyauwega,	Melzar Parker and others,[3]	4	2	1860 to 1866 inclusive.

[1] John Hicks, Dr. M. J. E. Hurlbut and Prof. J. C. Foye. [2] H. C. Mead and C. D. Webster.
[3] William Woods, John C. Hicks and Dr. James Matthews.

(Nos. 94 to 96.) **Eastern Wisconsin.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
94. Fort Howard.	January	110	87	41	23	157	213	155	77					
	February	112	88	26	21	182	195	113	57					
	March	136	159	56	41	179	138	112	70					
	April	214	161	63	43	121	120	94	41					
	May	150	170	76	33	225	115	74	49					
	June	91	115	48	51	159	149	70	31					
	July	72	122	36	32	172	189	84	40					
	August	80	121	47	50	159	181	80	39					
	September	81	87	54	36	172	137	112	45					
	October	90	86	36	71	170	197	126	69					
	November	132	96	56	39	163	171	133	57					
	December	104	94	30	40	141	181	177	78					
	Spring	500	490	195	117	525	373	280	160	...	N. 20° 20′ W.	.03½	N. 45° E.	.18
	Summer	243	358	131	133	490	519	234	110	...	S. 28 1 W.	.19	S. 35 E.	.09
	Autumn	303	269	146	146	505	505	371	171	...	S. 49 24 W.	·22	S. 33 W.	.05
	Winter	326	269	97	84	480	589	445	212	...	S. 68 30 W.	.31½	S. 83 W.	.15
	The year[3]	...	...	...	...	...	...	...	...	...	S. 54 50 W.	.17		
95. Fort Winnebago.	January	115	33	54	74	72	61	116	108					
	February	109	46	31	50	72	58	96	116					
	March	124	47	38	45	71	69	91	150					
	April	92	67	50	58	84	59	83	103					
	May	110	54	47	43	91	44	58	83					
	June	117	55	53	35	99	52	83	83					
	July	108	38	34	45	77	54	92	95					
	August	101	40	46	47	83	49	73	83					
	September	129	29	40	34	76	71	64	51					
	October	113	34	28	45	73	42	75	117					
	November	123	47	36	44	44	35	70	113					
	December	92	36	25	30	84	41	86	123					
	Spring	326	168	135	146	246	172	232	336	...	N. 47 54 W.	.18	S. 86 E.	.03
	Summer	326	133	133	127	259	155	248	261	...	N. 57 2 W.	.16	S. 33 E.	.04
	Autumn	365	110	104	123	193	148	209	281	...	N. 43 30 W.	.23	N. 3 E.	.05
	Winter	316	115	110	154	228	160	298	347	...	N. 61 36 W.	.23½	S. 77 W.	.05
	The year[3]	...	...	...		...	...	...	...	...	N. 52 28 W.	.20		
96. Surface winds at Smithsonian Stations[1] in 1854, '55, '56 & '57.[2] No. of observations.	Spring	157	221	96	122	111	327	228	206	...	N. 83 29 W.	.178	N. 64 E.	.12
	Summer	126	168	53	129	146	389	254	267	...	S. 80 11 W.	.295	S. 20 W.	.02
	Autumn	161	210	68	96	183	570	328	261	...	S. 75 47 W.	.331	S. 31 W.	.06
	Winter	113	122	31	64	59	376	268	193	...	S. 86 3 W.	.391	N. 86 W.	.10
	The year[3]	...	...	...	...	...	...	...	...	...	S. 83 19 W.	.296		
No. of miles.	Spring	1485	2949	1032	989	1184	3852	1926	2113	...	N. 78 53 W.	.150	N. 66 E.	.16
	Summer	734	752	344	788	848	2094	1134	1338	...	S. 72 26 W.	.273	S. 27 E.	.06
	Autumn	1109	1570	323	521	1487	3548	2675	1902	...	S. 80 24 W.	.348	S. 68 W.	.07
	Winter	696	1076	185	430	449	2605	1912	1406	...	S. 87 39 W.	.385	N. 8 W.	.11
	The year[3]	...	...	...	...	...	...	...	...	...	S. 85 26 W.	.270		
M'n vel. in miles p. h'r.	Spring	9.46	13.34	10.75	8.11	10.67	11.79	8.45	10.26					
	Summer	5.83	4.48	6.49	6.11	5.81	5.38	4.46	5.01					
	Autumn	6.89	7.48	4.75	5.43	8.13	6.22	8.16	7.29					
	Winter	6.16	8.82	5.97	6.72	7.61	6.93	7.13	7.28					

[1] Including also Waukesha in Southeastern Wisconsin.
[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.58	5.24	6.98	7.14	7.49
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.88	1.55	2.32	2.79	2.22
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.58	1.43	2.43	2.75	2.02
Excess of the latter over the former	—.30	—.12	+.11	—.04	—.20

[3] Computed from the resultants for the seasons.

(No. 97.) **Eastern Wisconsin.**—*Continued.*

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
97. Aggregate number of observations at all stations. Surface wind.	Spring	2306	3597	1377	1786	2163	3480	2426	2970	122	N. 59° 30′ W.	.10½	N. 57½° E.	.16
	Summer	1455	2507	1079	1989	2351	4282	2632	2716	114	S. 63 46 W.	.19½	S. 43½ E.	.07
	Autumn	1707	1997	874	1508	2220	4337	2749	3427	200	S. 80 51 W.	.26	S. 72½ W.	.03
	Winter	1713	1799	552	1058	1944	5587	3145	3646	134	S. 81 23 W.	.38½	S. 81 W.	.15½
	The year[1]	...	...	...	...	...	...	...	...	...	S. 81 29 W.	.23		
Motion of clouds.	Spring	355	630	228	190	169	1006	1218	998	...	N. 74 22 W.	.38	N. 56 E.	.11
	Summer	274	399	191	170	159	1278	1797	1057	...	N. 87 48 W.	.53½	S. 77 W.	.08
	Autumn	302	452	172	207	232	1303	1309	930	...	S. 89 29 W.	.46	S. 1 W.	.04
	Winter	269	367	120	168	157	1038	1150	875	...	N. 86 3 W.	.48½	S. 61 W.	.02
	The year[1]	...	...	...	...	...	...	...	...	...	N. 85 16 W.	.46		
2 preceding combined.	Spring	2661	4227	1605	1976	2332	4486	3644	3968	122	N. 66 50 W.	.16	N. 56½ E.	.15
	Summer	1729	2906	1270	2159	2510	5560	4429	3773	114	S. 76 10 W.	.26	S. 25 E.	.05
	Autumn	2009	2449	1046	1715	2450	5640	4058	4357	200	S. 83 22 W.	.30	S. 54 W.	.04
	Winter	1982	2166	672	1226	2101	6625	4295	4521	134	S. 84 6 W.	.39	S. 79½ W.	.12
	The year[1]	...	...	...	...	...	...	...	...	...	S. 87 37 W.	.27		

[1] Computed from the resultants for the seasons.

(Nos. 98 to 100.) **Southeastern Wisconsin.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date and remarks.
Aztalan,	James C. Brayton,	1	0	1851.
Beloit,	J. McQuigg, W. and H. D. Porter, and H. S. Kelsey,	13	5	1854 to 1867 inclusive.
Brighton,	George Matthews,	0	4	1862.
Burlington,	D. and G. Matthews,	2	1	1860, 1861 and 1862.
Caldwell Prairie,	S. Armstrong,	0	3	1861.
Dartford,	M. H. Towers,	1	2	1861 and 1862.
Delafield,	A. W. Clark,	0	3	1860.
Delavan,	Levens Eddy,	3	4	1864 to 1867 inclusive.
East Troy,	Jennings,	0	1	February, 1843.
Edgerton,	Henry J. Shintz,	2	6	1867, 1868 and 1869.
Fort Atkinson,	Post Surgeons,	1	0	1842.
Emerald Grove,	Orrin Dinsmore,	1	0	1852.
Holland,	John De Lycer,	1	3	1868 and 1869.
Janesville,	J. F. Willard and Dr. C. G. Pease,	7	1	1854 to 1858 and 1860 to 1862, both inclusive.
Kenosha,	Rev. John Gridley,	6	4	1856 to 1859 and 1861 to 1863, both inclusive.
Lake Mills,	Isaac Atwood,	2	1	1860, 1861 and 1862.
Madison,	Prof. J. W. Sterling and others,[1]	7	3	1854 to 1857, 1861 to 1865 both inclusive, and 1869.
Milwaukee,	J. A. Lapham and others,[2]	21	6	1843 to 1848 and 1854 to 1867, both inclusive ; two sets of observations in several of the years.
Norway,	John E. Himoe,	1	1	1856 and 1857.
Otsego,	L. H. Doyle,	0	6	1859.
Pardeeville,	S. Armstrong,	0	8	1860.
Racine,	W. J. Durham and H. W. Phelps,	1	6	1856, 1857 and 1861.
Ripon,	Prof. W. H. Ward,	0	10	1865 and 1866.
Rocky Run,	W. W. Curtis,	9	7	1860 to 1869 inclusive.
Southport,	Rev. John Gridley,	1	0	1849.
Springvale,	See Pardeeville,			
Summit,	Edward S. Spencer,	8	3	1845 to 1850 inclusive, 1852, 1861, 1862 and 1863.
Waterford,	S. Armstrong,	1	2	1860, 1861 and 1863.
Watertown,	William Ayres,	0	8	1852.
Waukesha,	Prof. S. A. Bean and L. C. Slye, M.D.	2	7	1856, 1857 and 1858.
Wautona,	....	0	2	1866.

[1] S. H. Carpenter, A. Schue, M.D., J. Jennings, S. P. Clarke and W. Fellows.
[2] Carl Winkler, M.D., F. C. Pomeroy and Prof. E. P. Larkin.

(Nos. 98 to 100.) **Southeastern Wisconsin.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
98. Fort Atkinson.		Spring	19	21	24	4	8	32	44	32	0	N. 64° 10′ W.	.29		
		Summer	5	5	15	17	34	18	59	31	0	S. 65 51 W.	.37½		
		Autumn	4	12	30	11	17	31	53	24	0	S. 69 18 W.	.27		
		Winter	13	4	22	13	17	21	54	36	0	N. 89 46 W.	.33½		
		The year	41	42	91	45	76	102	210	123	0	S. 84 8 W.	.30		
99. Surface wind at Smithsonian Stations[1] in 1854, '55, '56 & '57.[2]	No. of observations.	Spring	620	1095	525	755	787	1062	1019	880	...	S. 84 27 W.	.080	N. 48° E.	.11
		Summer	387	561	485	845	860	1024	728	619	...	S. 23 9 W.	.175	S. 47 E.	.12
		Autumn	448	467	349	674	939	1090	848	906	...	S. 55 11 W.	.223	S. 33 W.	.06
		Winter	524	449	271	541	612	1038	1282	1032	...	S. 84 56 W.	.298	N. 70 W.	.15
		The year[3]	...	...	...	...	...	...	...	...	...	S. 62 50 W.	.177		
	No. of miles.	Spring	4257	9470	3125	5097	5034	7974	7177	7109	...	N. 68 55 W.	.092	N. 46 E.	.12
		Summer	1528	2658	1547	3565	3752	5483	3365	3174	...	S. 38 12 W.	.211	S. 20 E.	.12
		Autumn	2720	3146	2646	2966	6854	6967	5499	6358	...	S. 60 51 W.	.233	S. 28 W.	.07
		Winter	3199	3940	1870	2740	3507	6012	7805	6864	...	N. 83 41 W.	.277	N. 51 W.	.13
		The year[3]	...	...	...	...	...	...	...	...	...	S. 76 6 W.	.179		
	M'n vel. in miles p.h'r.	Spring	6.87	8.65	5.95	6.75	6.40	7.51	7.04	8.08					
		Summer	3.95	4.74	3.19	4.22	4.36	5.35	4.62	5.13					
		Autumn	6.07	6.74	7.58	4.40	7.30	6.39	6.48	7.02					
		Winter	6.10	8.78	6.90	5.06	5.73	5.79	6.09	6.65					
100. Aggregate number of observations at all stations.	Surface wind.	Spring	2340	4542	2665	3310	2897	3870	3676	3941	1656	N. 46 50 W.	.05	N. 56 E.	.16
		Summer	1701	3153	2182	3495	3418	4783	3085	2971	2441	S. 26 39 W.	.13	S. 60 E.	.12
		Autumn	1861	2452	1342	2753	3517	5290	3766	4770	1925	S. 69 6 W.	.23	S. 59 W.	.06
		Winter	1833	2005	1046	2257	3009	5095	5089	5212	1473	S. 82 14 W.	.35	N. 88 W.	.18
		The year	7735	12152	7235	11815	12841	19038	15616	16894	7495	S. 68 45 W.	.16		
	Motion of clouds.	Spring	326	427	230	251	236	813	1426	986	...	N. 80 23 W.	.43	N. 15 E.	.06
		Summer	309	338	161	248	302	1052	1760	1086	...	S. 76 52 W.	.41	S. 22 E.	.11
		Autumn	316	399	145	273	283	1121	1666	1099	...	N. 87 40 W.	.49½	N. 80 W.	.05
		Winter	252	381	124	251	224	792	1278	864	...	N. 84 48 W.	.45	N. 14 W.	.03
		The year[3]	...	...	...	...	...	...	...	...	...	N. 88 44 W.	.44		
	2 preceding combined.	Spring	2666	4969	2895	3561	3133	4683	5102	4927	1656	N. 76 43 W.	.09	N. 58½° E.	.12½
		Summer	2010	3491	2343	3743	3720	5835	4845	4057	2441	S. 54 20 W.	.17	S. 46 E.	.08
		Autumn	2177	2851	1487	3026	3800	6411	5432	5869	1925	S. 75 53 W.	.26½	S. 73 W.	.06½
		Winter	2085	2386	1170	2508	3233	5887	6367	6076	1473	S. 83 23 W.	.30	N. 83½ W.	.10
		The year	8938	13697	7895	12838	13886	22816	21746	20929	7495	S. 77 42 W.	.20½		

[1] Including Platteville in Southwestern Wisconsin.
[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.30	4.55	6.49	6.25	6.15
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.58	.80	1.45	1.86	1.09
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	.67	.96	1.51	1.73	1.10
Excess of the latter over the former	+.09	+.16	+.06	—.13	+.01

[3] Computed from the resultants for the seasons.

(Nos. 101 and 102.) **Western Illinois,** latitude 40° to 41°.

Observed as follows :—

Place of observation.	By whom observe	Aggregate length of time. yrs.	mos.	Date.
Augusta,	Dr. S. B. Mead,	15	0	1854 to 1859 and 1861 to 1869 both inclusive.
Carthage,	S. J. Wallace,	0	1	1856.
Elmore,	W. H. Adams,	4	4	1864 to 1869 inclusive.
Galesburg,	Prof. Wm. Livingston,	8	10	1861 to 1869 inclusive.
Macomb,	Richards,	0	3	1843.
Mount Sterling,	Rev. Alexander Duncan,	4	0	1866 to 1869 inclusive.
Pekin,	J. H. Riblet,	8	7	1857 to 1865 inclusive.
Peoria,	F. Brendel and M. A. Breed,	15	0	1856 to 1869 inclusive.[1]
Warsaw,	B. Whitaker,	2	5	1856, 1857, 1868 and 1869.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
101. Surface winds at Smithsonian Stations[2] in 1854, '55, '56 & '57.[3] No. of observations.	Spring	151	271	236	300	340	297	375	375	...	S. 53° 44′ W.	.108		
	Summer	139	228	197	304	432	517	353	290	...	S. 34 38 W.	.234		
	Autumn	145	195	189	225	367	443	430	345	...	S. 58 3 W.	.241		
	Winter	123	202	164	218	253	262	383	374	...	S. 80 31 W.	.187		
	The year[4]	...	...	...	...	...	...	...	...	...	S. 55 48 W.	.181		
No. of miles.	Spring	1619	3054	2003	2583	3632	3849	4588	6109	...	S. 82 55 W.	.226		
	Summer	990	1388	895	1649	3190	4695	2886	2844	...	S. 54 29 W.	.320		
	Autumn	1126	1637	1120	1527	3158	4862	4039	4275	...	S. 71 39 W.	.330		
	Winter	1004	1496	1095	1887	2625	2689	3948	3977	...	S. 79 12 W.	.277		
	The year[4]	...	...	...	...	...	...	...	...	...	S. 72 27 W.	.278		
M'n vel. in miles p. h'r.	Spring	10.72	11.27	8.49	8.61	10.68	12.96	12.23	16.27					
	Summer	7.12	6.09	4.54	5.42	7.38	9.08	8.18	9.81					
	Autumn	7.77	8.39	5.93	6.79	8.60	10.98	9.39	12.39					
	Winter	8.16	7.41	6.68	8.66	10.38	10.26	10.31	10.63					
102. Aggregate number of observations at all stations. Surface winds.	Spring	1024	1961	1572	1822	2091	1766	2341	2786	323	S. 79 20 W.	.08½	N. 19½° E.	.09
	Summer	835	1649	1635	1789	2957	2464	1814	1578	1023	S. 12 1 W.	.18½	S. 42½ E.	.11
	Autumn	937	1284	1289	1694	2475	2109	2608	2417	594	S. 56 18 W.	.19	S. 84 W.	.04
	Winter	929	1358	1084	1841	2188	2340	2852	2320	202	S. 60 3 W.	.20	N. 89 W.	.06
	The year[4]	...	...	...	...	...	...	...	...	...	S. 48 24 W.	.15		
Motion of clouds.	Spring	249	400	225	293	347	988	1232	1031	...	N. 89 46 W.	.41	N. 12 E.	.05½
	Summer	282	319	200	305	554	1109	1219	900	...	S. 78 25 W.	.42	S. 22 E.	.04
	Autumn	170	265	223	306	400	931	1052	783	...	S. 77 29 W.	.41	S. 30½ W.	.04
	Winter	116	204	148	215	191	755	953	688	...	S. 85 8 W.	.47	N. 76 W.	.05
	The year[4]	...	...	...	...	...	...	...	...	...	S. 71 19 W.	.44½		
2 preceding combined.	Spring	1273	2361	1797	2115	2438	2754	3573	3817	323	S. 85 45 W.	.16	N. 15 E.	.08
	Summer	1117	1968	1835	2094	3511	3573	3033	2478	1023	S. 38 39 W.	.20	S. 38½ E.	.08½
	Autumn	1107	1549	1512	2000	2875	3040	3660	3200	594	S. 64 1 W.	.23	S. 68 W.	.03
	Winter.	1045	1562	1232	2056	2379	3095	3805	3008	202	S. 68 33 W.	.25	N. 89½ W.	.05½
	The year[4]	...	...	...	...	...	...	...	...	...	S. 63 26 W.	.20		

[1] Two independent sets of observations reported in the year 1861.
[2] Including also Edgington and Rock Island in Northwestern Illinois.
[3] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	11.70	7.53	9.30	9.46	9.50
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.26	1.76	2.24	1.67	1.72
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.64	2.41	3.07	2.62	2.64
Excess of the latter over the former	+1.38	+.65	+.83	+.95	+.92

[4] Computed from the resultants for the seasons.

(Nos. 103 and 104.) **Northwestern Illinois,** north of latitude 41°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Albany,	Warren Olds,	1	10	1861 and 1862.
Andalusia,	E. H. Bowman, M.D.,	3	11	1866 to 1869 inclusive.
Carbon Cliff,	Mrs. W. S. Thomas,	0	7	1859.
Dixon,	J. T. Little,	3	5	1860, 1861, 1862, 1863 and 1867.
Edgington,	E. H. Bowman, M.D.,	4	2	1857 to 1861 inclusive.
Elmira,	O. A. Blanchard,	0	5	1862 and 1863.
Galena,	Emil Hauser,	0	4	1860.
Granville,	L. G. Edgerly,	0	1	1857.
Lacon,	A. H. Thompson,	0	2	1867.
Osceola,	J. S. Pashley, M.D.,	1	5	1860 and 1861.
Rock Island,	Post Surgeon,	8	0	1827 to 1835 inclusive, except 1832.
Tiskilwa,	Verry Aldrich,	9	9	1860 to 1869 inclusive.
Willow Creek,	E. E. Bacon,	2	7	1860 to 1863 inclusive.
Winnebago,	J. W. Tolman,	11	8	1857 to 1859 and 1861 to 1869 both inclusive.
Wyanet,	E. S. Phelps and Miss L. E. Phelps,	5	3	1864 to 1869 inclusive.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
103. Rock Island.	January	42	23	29	17	35	24	38	40					
	February	35	19	15	11	52	16	37	40					
	March	27	26	21	14	76	21	32	31					
	April	45	30	32	13	42	20	36	26					
	May	29	32	22	21	68	25	34	17					
	June	16	23	27	18	81	23	33	19					
	July	29	17	15	21	72	33	40	21					
	August	27	27	33	20	64	37	24	16					
	September	46	23	23	28	48	20	29	23					
	October	25	21	26	19	56	28	53	20					
	November	38	15	35	14	32	46	33	28					
	December	26	10	30	16	46	39	55	26					
	Spring	101	88	75	48	186	66	102	74	...	S. 30° 18′ W.	.08		
	Summer	72	67	75	59	217	93	97	56	...	S. 13 1 W.	.23		
	Autumn	109	59	84	61	136	94	115	71	...	S. 54 35 W.	.10½		
	Winter	103	52	74	44	133	79	130	106	...	S. 87 28 W.	.16½		
	The year	385	266	308	212	672	332	444	307	...	S. 43 9 W.	.12½		
104. Aggregate number of observations at all stations. Surface winds.	Spring	957	2155	1200	1869	1360	2040	1683	2598	239	N. 78 4 W.	.07	N. 36½° E.	.09
	Summer	772	1903	1096	1954	1649	3027	1167	1804	460	S. 23 8 W.	.14	S. 46 E.	.09½
	Autumn	748	1406	764	1406	1455	2488	1381	2317	457	S. 67 47 W.	.17	S. 85 W.	.03½
	Winter	677	1158	715	1506	1400	2128	1923	2476	247	S. 74 21 W.	.22	N. 88 W.	.09
	The year[1]	...	...	...	...	...	...	...	...	...	S. 64 6 W.	.13½		
Motion of clouds.	Spring	103	318	107	279	165	662	753	671	...	S. 88 59 W.	.52	N. 49 W.	.05½
	Summer	104	256	137	220	132	904	880	646	...	S. 82 59 W.	.46	S. 54½ E.	.03
	Autumn	67	235	65	170	89	784	728	609	...	S. 85 49 W.	.50	N. 75½ W.	.02
	Winter	72	228	91	193	146	735	611	576	...	S. 82 0 W.	.44	S. 61 E.	.05
	The year[1]	...	...	...	...	...	...	...	...	...	S. 85 9 W.	.48		
2 preceding combined.	Spring	1060	2473	1307	2148	1525	2702	2436	3269	239	N. 73 10 W.	.13	N. 30 E.	.10½
	Summer	876	2159	1233	2174	1781	3931	2047	2450	460	S. 49 4 W.	.18	S. 34 E.	.08
	Autumn	815	1641	892	1876	1544	3272	2109	2926	457	S. 69 54 W.	.21	S. 46½ W.	.02½
	Winter	749	1386	806	1699	1546	2863	2534	3052	247	S. 76 39 W.	.26	S. 84 W.	.07½
	The year[1]	...	...	...	...	...	...	...	...	...	S. 73 23 W.	.18½		

[1] Computed from the resultants for the seasons.

(Nos. 105 to 107.) **Northeastern Illinois.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Aurora,	A. J. Babcock & A. Spaulding,	6	4	1857 to 1861 and 1865 to 1869 both inclusive.
Batavia,	William Coffin and others,[1]	3	7	1854, 1857, 1858, 1859 and 1860.
Belvidere,	G. B. Mess,	1	9	1868 and 1869.
Channahan,	Rev. D. H. Sherman and Dr. J. Fitch,	0	7	1860 and 1861.
Chicago,	S. Brookes and others,[2]	14	11	1845, 1856, 1857 and 1860 to 1869 inclusive.
DeKalb,	J. D. Parker,	0	2	1866.
Elgin,	John B. Newcomb,	3	11	1858 to 1862 inclusive.
Evanston,	H. G. Meacham and others,[3]	2	10	1860, 1864, 1865, 1866 and 1869.
Farm Ridge,	Elmer Baldwin,	0	10	1860.
Fort Dearborn,	Post Surgeon,	4	0	1833 to 1836 inclusive.
Fremont Centre,	J. H. Smith,	1	0	1857.
Joliet,	Brownson,	0	6	1843 to 1845 inclusive.
King's Mills,	Dr. A. and Mrs. Spaulding,	0	8	1869.
Marengo,	O. P. and G. S. Rogers,	8	11	1856 to 1869 inclusive, except 1864 and 1867.
Magnolia,	H. K. Smith,	1	4	1866, 1867 and 1868.
Monroe,	Silas Meacham,	1	5	1849 and 1850.
Naperville,	L. and M. S. Ellsworth,	0	2	1860.
Ottawa,	Dr. J. O. Harris and others,[4]	15	6	1854 to 1869 inclusive.
Riley,	E. Babcock,	11	1	1856 to 1867 inclusive and 1869.
Rochelle,	Daniel Carey,	3	5	1866 to 1869 inclusive.
Sandwich,	N. E. Bullou, M.D.,	10	11	1859 to 1869 inclusive.
Waukegan,	Dr. William Joslyn,	0	3	1849.
Wheaton,	Prof. Geo. H. Collier,	2	10	1857, 1858, 1859 and 1861.
Woodstock,	Geo. R. Bassett,	0	11	1860 and 1861.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
105. Chicago, (Fort Dearborn).	Spring	216	90	70	56	100	76	80	44	...	N. 4° 5′ E.	.16	N. 43° E.	.19
	Summer	154	82	75	74	85	135	90	36	...	N. 79 43 W.	.03½	S. 79 E.	.08
	Autumn	139	52	36	74	83	144	123	92	...	N. 88 43 W.	.22	S. 80 W.	.10
	Winter	94	48	34	74	130	104	132	100	...	S. 69 51 W.	.23	S. 44 W.	.14
	The year[6]	603	272	215	278	398	459	425	272	...	N. 78 32 W.	.12		
106. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[6] No. of observations.	Spring	135	261	163	174	210	435	381	266	54	S. 71 41 W.	.213	N. 20 E.	.11
	Summer	57	152	112	245	176	492	216	184	131	S. 36 49 W.	.285	S. 48 E.	.09
	Autumn	49	200	102	223	235	645	269	263	75	S. 47 11 W.	.337	S. 9 W.	.06
	Winter	80	113	96	147	206	370	438	198	57	S. 64 7 W.	.365	N. 82 W.	.09
	The year[6]	...	...	...	...	...	...	...	...	...	S. 54 7 W.	.291		
No. of miles.	Spring	1312	2174	901	1016	1741	2801	3183	2101	...	S. 88 16 W.	.223	N. 24 E.	.16
	Summer	348	766	540	1196	1129	3629	1448	1402	...	S. 49 10 W.	.359	S. 8 E.	.09
	Autumn	196	1386	597	1111	1354	4515	2249	1824	...	S. 56 44 W.	.381	S. 30 W.	.07
	Winter	326	711	793	1005	1312	2352	3129	1347	...	S. 63 0 W.	.365	S. 76 W.	.04
	The year[6]	...	...	...	...	...	...	...	...	...	S. 62 16 W.	.322		
M'n vel. in miles p. h'r.	Spring	9.72	8.33	5.53	5.84	8.24	6.44	8.35	7.90					
	Summer	6.11	5.04	4.82	5.88	6.41	7.38	6.70	7.62					
	Autumn	4.00	6.93	5.85	4.98	5.76	7.00	8.36	6.94					
	Winter	4.07	6.29	8.26	6.84	6.32	6.36	7.14	6.80					

[1] T. Mead, M.D., Wm. Coffin, E. Capen and F. Crandon.

[2] G. D. Hiscox, M. C. Armstrong, J. H. Roe, G. A. Boetner, A. M. Byrne, J. O. Donoghoe, J. A. Pool and J. H. Langguth; several independent sets of observations.

[3] C. E. Smith, A. D. Langworthy, W. H. Morrison, H. W. Scovill, Joseph H. Gill, F. J. Huse and O. Marcy.

[4] G. O. Smith, M.D., S. L. Shotwell and Mrs. Emily H. Merwin.

[5] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn	Winter.	The year.
Average velocity of all winds in miles per hour	7.52	6.40	6.66	6.66	6.81
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.60	1.82	2.24	2.43	1.98
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.68	2.30	2.54	2.46	2.19
Excess of the latter over the former	+.08	+.48	+.30	+.03	+.21

[6] Computed from the resultants for the seasons.

(No. 107.) **Northeastern Illinois.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
107. Aggregate number of observations at all stations.	Surface wind.	Spring	1551	4250	2742	2836	2596	4387	3872	3477	548	S. 67° 43′ W.	.07	N. 53° E.	.11½
		Summer	1338	3557	2510½	2718	2998½	5603½	2987	2256	1146	S. 24 56 W.	.15	S. 67 E.	.10½
		Autumn	1298½	2411	1673	2293	2837½	5251	3594½	3501	890	S. 60 38 W.	.23	S. 69½ W.	.05
		Winter	1213	1896	1370	2311	2804	5506	5041	4241	540	S. 69 53 W.	.32½	S. 85 W.	.14½
		The year[1]	...	...	...	...	...	...	...	...	...	S. 58 36 W.	.18½		
	Motion of clouds.	Spring	413	622	415	291	453	1409	2073	1077	...	S. 89 9 W.	.41	N. 53½ E.	.05
		Summer	348	554	340	254	529	1401	2389	985	...	S. 85 15 W.	.46½	S. 67 W.	.02
		Autumn	233	444	282	272	371	1212	1792	871	...	S. 85 34 W.	.44	S. 58 E.	.02
		Winter	241	373	307	266	360	1314	2057	1034	...	S. 85 20 W.	.49½	S. 69 W.	.04
		The year[1]	...	...	...	...	...	...	...	...	...	S. 86 13 W.	.45		
	2 preceding combined.	Spring	1964	4872	3157	3127	3049	5796	5945	4554	548	S. 80 42 W.	.14	N. 52½ E.	10
		Summer	1686	4111	2850½	2972	3527½	7004½	5376	3241	1146	S. 52 2 W.	.19	S. 65½ E.	.08
		Autumn	1531½	2855	1955	2565	3208½	6463	5386½	4372	890	S. 67 53 W.	.27	S. 65 W.	.03½
		Winter	1454	2269	1677	2577	3164	6820	7098	5275	540	S. 74 1 W.	.35½	S. 84½ W.	.12
		The year[1]	...	...	...	...	...	...	...	...	...	S. 68 55 W.	.23		

[1] Computed from the resultants for the seasons.

(Nos. 108 and 109.) **Eastern Illinois**, latitude 40° to 41°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bloomington,	Jesse Allison,	1	4	1860 and 1861.
Clinton,	C. H. Moore,	0	8	1864, 1865 and 1866.
Wapella,	T. L. Graff,	0	2	1868.
Waynesville,	Joshua E. Cantril,	1	0	1858.
West Urbana,	John Swain, M.D.,	2	9	1857, 1858 and 1859.

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
108. Surface wind at West Urbana in the year 1857.[1]	No. of observations.	Spring	4	52	1	39	12	31	9	32	...	N. 80° 51′ E.	.0664		
		Summer	29	38	7	31	51	58	16	46	...	S. 52 54 W.	.153		
		Autumn	23	27	18	32	30	67	31	45	...	S. 62 40 W.	.208		
		Winter	4	12	4	7	9	38	7	12	...	S. 51 29 W.	.342		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 52 31 W.	.161		
	No. of miles.	Spring	51	935	4	368	153	256	117	389	...	N. 41 52 E.	.232		
		Summer	102	136	51	122	208	382	160	165	...	S. 51 28 W.	.302		
		Autumn	56	144	91	76	108	382	299	291	...	S. 82 38 W.	.368		
		Winter	18	90	12	38	49	249	14	58	...	S. 44 50 W.	.345		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 81 46 W.	.089		
	M'n vel. in miles p.h'r.	Spring	12.75	17.98	4.00	9.44	12.75	8.26	13.00	12.16					
		Summer	3.52	3.58	7.29	3.94	4.08	6.57	10.00	3.59					
		Autumn	2.43	5.33	5.06	2.37	3.60	5.70	9.65	6.47					
		Winter	4.50	7.50	3.00	5.43	5.44	6.55	2.00	4.83					

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	12.63	4.80	5.30	5.68	7.10
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.84	.73	1.10	1.94	1.14
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.93	1.45	1.95	1.96	.63
Excess of the latter over the former	+2.09	+.72	+.85	+.02	—.51

[2] Computed from the resultants for the seasons.

(No. 109.) **Eastern Illinois.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
			Relative Prevalence of Winds from the Different Points of the Compass.												
109. Aggregate number of observations at all stations.	Surface wind.	Spring	110	215	139	225	263	288	265	243	53	S. 44° 46′ W.	.15	S. 68° E.	.04
		Summer	143	203	113	185	187	234	194	149	80	S. 40 17 W.	.08	N. 71 E.	.10
		Autumn	102	108	130	142	117	229	214	161	63	S. 64 34 W.	.16	N. 4 W.	.03
		Winter	95	115	67	135	263	308	234	278	19	S. 63 19 W.	.30	S. 72 W.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	S. 56 57 W.	.17		
	Motion of clouds.	Spring	23	46	27	23	49	87	105	50	...	S. 74 6 W.	.32	S. 62½ E.	.06½
		Summer	27	20	13	24	37	20	84	7	...	S. 69 32 W.	.27	S. 72 E.	.12
		Autumn	11	5	10	1	7	10	59	2	...	N. 88 44 W.	.51	N. 65 W.	.16
		Winter	11	18	8	13	35	46	52	55	...	S. 81 25 W.	.40	S. 89 W.	.03
		The year[1]	...	...	...	...	...	...	...	...	...	S. 81 1 W.	.37		
	2 preceding combined.	Spring	133	261	166	248	312	375	370	293	53	S. 54 15 W.	.18	S. 56 E.	.03
		Summer	170	223	126	209	224	254	278	156	80	S. 50 16 W.	.10	N. 76 E.	.10
		Autumn	113	113	140	143	124	239	273	163	63	S. 70 01 W.	.18	N. 4 E.	.03
		Winter	106	133	75	148	298	354	286	333	19	S. 66 25 W.	.31	S. 73 W.	.12
		The year[1]	...	...	...	...	...	...	...	...	...	S. 62 21 W.	.19		

[1] Computed from the resultants for the seasons.

(Nos. 110 and 111.) **Northwestern Indiana**
Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs	mos.	Date.
Kentland,	Daniel Spitler,	0	9	1869.
La Fayette,	H. Peters and others,[1]	1	5	1854, 1865 and 1869.
Logansport,	C. B. Laselle and others,[2]	4	2	1854, 1857 to 1861 inclusive and 1863.
Laport,	R. M. Newkirk,	0	9	1850 and 1869.
Michigan City,	C. S. Woodward and others,[3]	1	11	1857 and 1858.
Mishawaka,	Geo. C. Munfield,	0	9	1859.
Notre Dame,	Thomas Vagnier,	0	1	May, 1859.
Rensselaer,	J. H. Loughridge, M.D.,	3	2	1844, 1864, 1865 and 1867 to 1869 inclusive.
South Bend,	Jas. A. Dayton and others,[4]	5	4	1860 to 1865 inclusive.
Valparaiso,	Rev. Robert Beer,	0	2	1869.
Winnamac,	....	0	3	1843 to 1844.

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
			Relative Prevalence of Winds from the[5] Different Points of the Compass.												
110. Surface winds at Smithsonian Stations in 1854,' 55, '56 & '57.[5]	No. of observat'ns.	Spring	56	53	6	44	21	72	26	69	...	N. 52° 29′ W.	.175	N. 7° E.	.16
		Summer	64	41	11	26	60	93	103	31	...	S. 77 33 W.	.248	N. 87 W.	.08
		Autumn	43	27	7	34	76	24	26	26	...	S. 1 13 E.	.134	S. 64 E.	.18
		Winter	25	11	6	20	48	38	30	37	...	S. 61 23 W.	.289	S. 49 W.	.13
		The year[6]	...	...	...	...	...	...	...	...	...	S. 70 51 W.	.167		
	No. of miles.	Spring	45	584	14	226	106	431	149	663	...	N. 23 47 W.	.299	N. 25 E.	.25
		Summer	558	187	22	124	497	616	331	261	...	S. 78 25 W.	.219	S. 5 E.	.10
		Autumn	729	187	47	166	723	327	539	435	...	N. 81 53 W.	.210	S. 36 E.	.03
		Winter	122	68	7	76	340	135	244	332	...	S. 79 44 W.	.354	S. 47 W.	.17
		The year[6]	...	...	...	...	...	...	...	...	...	N. 75 33 W.	.223		
	M'n vel. in miles p.h'r.	Spring	8.05	11.02	2.33	5.13	5.05	5.99	5.73	9.61					
		Summer	8.72	4.56	2.00	4.77	8.28	6.62	3.21	8.42					
		Autumn	16.95	6.93	6.71	4.88	9.51	13.62	20.73	16.73					
		Winter	4.88	6.18	1.17	3.80	7.08	3.55	8.13	8.97					

[1] A. H. Bixby, Isaac E. Windle and J. W. Newton.
[2] Isaac Bartlett and T. B. Helm.
[3] W. Woodbridge, B. D. Angell and H. Blake.
[4] Reuben Burroughs.
[5] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.56	6.05	11.99	6.16	7.94
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.32	1.50	1.61	1.78	1.33
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.26	1.33	2.52	2.18	1.77
Excess of the latter over the former	+.94	—.17	+.91	+.40	+.44

[6] Computed from the resultants for the seasons.

(No. 111.) **Northwestern Indiana.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
111. Aggregate number of observations at all stations.	Surface winds.	Spring	343	438	305	581	440	1016	923	771	305	S. 72° 16′ W.	.27	N. 53½° E.	.05
		Summer	480	358	369	460	501	1215	924	648	456	S. 69 6 W.	.25	N. 71 E.	.04
		Autumn	232	274	268	415	444	1026	827	781	367	S. 70 14 W.	.31	S. 79½ W.	.02
		Winter	160	307	252	434	289	1087	979	563	249	S. 66 43 W.	.34½	S. 54 W.	.06
		The year[1]	...	...	...	...	...	...	...	...	...	S. 69 20 W.	.29		
	Motion of clouds.	Spring	140	173	155	209	200	474	701	351	...	S. 78 39 W.	.36½	S. 79 E.	.08
		Summer	158	117	109	118	216	498	933	376	...	S. 83 31 W.	.51	N. 89 W.	.07
		Autumn	127	102	72	113	138	463	515	343	...	S. 83 8 W.	.46½	N. 82 W.	.02
		Winter	54	156	106	148	81	470	557	277	...	S. 83 30 W.	.41½	N. 53 E.	.02
		The year[1]	...	...	...	...	...	...	...	...	...	S. 82 25 W.	.44		
	2 preceding combined.	Spring	483	611	460	790	640	1490	1624	1122	305	S. 74 56 W.	.28	N. 68 E.	.05
		Summer	638	475	478	578	717	1713	1857	1024	456	S. 76 2 W.	.33½	N. 28 W.	.01
		Autumn	359	376	340	528	582	1489	1342	1124	367	S. 74 25 W.	.35	S. 89 W.	.01½
		Winter	214	463	358	582	370	1557	1536	840	249	S. 70 42 W.	.37	S. 41½ W.	.04
		The year[1]	...	...	...	...	...	...	...	...	...	S. 74 6 W.	.33		

[1] Computed from the resultants for the seasons.

(Nos. 112 to 114.) **Northeastern Indiana.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Balbec,	Miriam Griest,	0	4	First 4 months of 1866.
Brockville or Fremont,	Matthew Coffin,	3	0	1840 to 1843 inclusive.
Columbia,	Dr. F. and Miss L. McCoy,	4	1	1865 to 1869 inclusive.
Fort Wayne,	Prof. A. C. Huestis and Miss G. Webb,	0	11	1849, 1860 and 1861.
Jalapa,	Albert C. Irwin,	1	0	1868 and 1869.
Kendallville,	W. B. Coventry and J. Knauer,	0	8	1854.
Leo,	W. W. Spratt, M.D.,	0	1	May, 1861.
Muncie,	E. J. Rice and G. W. H. Kemper,	4	3	1863, 1864 and 1866 to 1869 inclusive
Pennville,	John Griest,	1	0	1864 and 1865.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
112. Brockville (*now* Fremont).	January	3	4	8	1	1	3	29	20	32	12	52	21	60	13	10	0	3		
	February	4	4	5	1	8	13	7	4	15	7	57	29	67	17	9	1	1		
	March	6	3	18	15	17	11	17	8	13	4	50	27	41	17	20	2	3		
	April	4	3	20	17	9	7	23	7	26	3	29	5	39	21	25	3	13		
	May	8	17	21	11	12	5	24	2	15	4	44	5	48	12	30	3	4		
	June	11	4	4	4	4	0	25	3	14	8	56	6	39	12	23	8	2		
	July	6	4	17	0	3	0	33	5	5	2	76	5	31	14	30	3	6		
	August	7	2	27	1	14	1	30	5	23	1	33	3	24	16	39	0	14		
	September	9	5	14	5	10	4	21	7	10	13	57	6	28	11	31	5	4		
	October	0	10	22	0	10	8	40	0	16	2	54	22	48	22	22	0	10		
	November	0	0	1	6	4	0	33	4	23	8	31	24	37	4	9	1	0		
	December	6	10	12	9	5	4	8	6	7	14	40	15	30	12	12	4	3		
	Spring	18	23	59	43	38	23	64	17	54	11	123	37	128	40	75	8	20	S. 66° 55′ W.	.20
	Summer	24	10	48	5	21	1	88	13	42	11	165	14	94	52	92	11	22	S. 68 24 W.	.32
	Autumn	9	15	37	11	24	12	94	11	49	23	142	53	113	37	62	6	14	S. 52 40 W.	.36
	Winter	13	18	25	11	14	20	44	30	54	33	149	65	157	42	31	5	7	S. 56 59 W.	.50
	The year	64	66	169	70	97	56	290	71	199	78	579	168	492	171	260	30	63	S. 60 5 W.	.34

(Nos. 113 and 114.) **Northeastern Indiana.**—*Continued.*

Place of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
113. Surface winds at Kendallville in the year 1854.[1]	No. of observations.	Spring	23	21	23	40	28	46	45	34	...	S. 52° 47′ W.	.169	N. 66° E.	.13
		Summer	5	12	18	13	34	74	58	35	...	S. 60 3 W.	.460	S. 63 W.	.16
		Autumn	5	1	7	15	6	31	14	7	...	S. 38 59 W.	.417	S. 2 W.	.17
		Winter	2	6	9	8	5	7	19	17	...	N. 81 11 W.	.228	N. 9 E.	.19
		The year[2]	...	...	...	...	...	...	...	...	...	S. 58 39 W.	.298		
	No. of miles.	Spring	184	164	128	179	134	349	428	453	...	N. 79 45 W.	.310	N. 29 E.	.12
		Summer	12	46	60	32	170	282	253	246	...	S. 71 15 W.	.491	S. 43½ W.	.15
		Autumn	24	2	14	32	26	102	30	44	...	S. 56 0 W.	.417	S. 5 E.	.18
		Winter	37	51	77	44	35	40	226	173	...	N. 66 32 W.	.356	N. 11 E.	.19
		The year[2]	...	...	...	...	...	...	...	...	...	S. 82 45 W.	.365		
	M'n vel. in miles p'r hour.	Spring	8.00	7.81	5.57	4.47	4.79	7.59	9.51	13.32					
		Summer	2.40	3.83	3.33	2.46	5.00	3.81	4.36	7.03					
		Autumn	4.80	2.00	2.00	2.13	4.33	3.29	2.14	6.29					
		Winter	18.50	8.50	8.56	5.50	7.00	5.71	11.89	10.18					
114. Aggregate number of observations at all stations.	Surface winds.	Spring	160	436	206	370	327	886	674	764	385	S. 79 1 W.	.26	N. 41 E.	.05½
		Summer	143	350	196	351	274	952	472	679	629	S. 70 49 W.	.27	N. 87 E.	.03½
		Autumn	94	177	94	290	214	810	371	606	609	S. 70 3 W.	.31	S. 6 W.	.02
		Winter	80	283	110	281	261	982	784	573	496	S. 71 10 W.	.38	S. 66 W.	.07½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 72 56 W.	.30		
	Motion of clouds.	Spring	36	126	73	84	77	329	296	240	...	S. 80 28 W.	.39	S. 73 E.	.05
		Summer	33	81	69	58	65	316	335	236	...	S. 82 37 W.	.47	S. 66 W.	.03
		Autumn	24	42	17	63	39	205	116	194	...	S. 83 1 W.	.44	S. 2½ E.	.00½
		Winter	24	122	37	62	60	298	308	252	...	S. 87 11 W.	.46	N. 42 W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 83 22 W.	.44		
	Two preceding combined.	Spring	196	562	279	454	404	1215	970	1004	385	S. 79 41 W.	.29	N. 43 E.	.04
		Summer	176	431	265	409	339	1268	807	915	629	S. 75 6 W.	.28	N. 82 E.	.04
		Autumn	118	219	111	353	253	1015	487	800	609	S. 73 5 W.	.33	S. 9½ W.	.02
		Winter	104	405	147	343	321	1280	1092	825	496	S. 75 26 W.	.39	S. 73 W.	.07
		The year[2]	...	...	...	...	...	...	...	...	...	S. 75 36 W.	.32		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.77	4.42	3.19	9.36	6.18
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.31	2.03	1.33	2.13	1.84
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.41	2.17	1.33	3.33	2.15
Excess of the latter over the former	+1.10	+.14	.00	+1.20	+.31

[2] Computed from the resultants for the seasons.

(Nos. 115 and 116.) **Southwestern Michigan.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Battle Creek,	Dr. W. M. Campbell,	6	10	1854 to 1859 inclusive and 1867.
Burr Oak (Westport),	Charles Betts,	0	10	1850 and 1851.
Cooper,	Mrs. Octavia C. Walker,	6	7	1854 to 1862 inclusive, except 1859.
Grand Rapids,	Alfred O. Currier & others,[1]	10	3	1854 to 1860 and 1865 to 1869 both inclusive.
Holland,	L. H. Streng,	7	5	1856, 1860 to 1864 and 1866 to 1869 both inclusive.
Kalamazoo,	M. Chase and F. Little,	1	2	1866 to 1869 inclusive.
Litchfield,	R. Bullard,	3	7	1866 to 1869 inclusive.
New Buffalo,	J. B. Crosby,	2	2	1859 to 1862 inclusive.
Newark,	L. H. Streng,	0	8	1856.
Oshtemo,	H. H. Mapes,	4	8	1864 to 1869 inclusive.
Otsego,	Matthew Coffin,	2	4	1860, 1861 and 1862.
Saugatuck,	L. H. Streng,	1	2	1855 and 1856.
West Oshtemo,	....	1	2	1865, 1866 and 1867.

[1] L. H. Streng, E. A. Strong, J. B. Parker and E. S. Holmes.

(Nos. 115 and 116.) **Southwestern Michigan.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
115. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observat'ns.	Spring	214	350	389	192	192	484	923	298	...	N. 89° 49′ W.	.199	N. 24½° E.	.08
		Summer	146	215	293	179	276	631	864	288	...	S. 69 47 W.	.254	S. 21 W.	.02
		Autumn	139	262	345	186	287	576	851	252	...	S. 67 5 W.	.227	S. 45 E.	.03
		Winter	131	217	355	206	198	609	944	246	...	S. 70 31 W.	.288	S. 57 W.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 73 30 W.	.239		
	No. of miles.	Spring	938	2110	1925	1074	1036	3902	6531.5	1988	...	S. 83 43 W.	.289	N. 44 E.	.07
		Summer	402	760	972	529	959	3188	4509	1523	...	S. 75 14 W.	.351	S. 6 W.	.01½
		Autumn	421	995	14885	667	1280	3854	6097	1635	...	S. 73 17 W.	.365	S. 29 W.	.03
		Winter	1013	1181.5	2038	1207	986	4596	7905	1831	...	S. 77 25 W.	.379	S. 83 W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 77 22 W.	.347		
	M'n vel. in miles p.h'r.	Spring	4.38	6.03	4.95	5.59	5.40	8.06	7.08	6.67					
		Summer	2.75	3.53	3.32	2.96	3.47	5.05	5.22	5.29					
		Autumn	3.03	3.80	4.31	3.59	4.46	6.69	7.16	6.49					
		Winter	7.73	5.44	5.74	5.86	4.98	7.55	8.37	7.44					
116. Aggregate number of observations at all stations.	Surface winds.	Spring	689	1259	1557	1012	644	2000	2666	1598	1109	S. 88 12 W.	.16	N. 36½ E.	.10
		Summer	459	785	1008	720	673	2530	2530	1301	2131	S. 71 52 W.	.27½	N. 89½ W.	.04
		Autumn	507	904	972	1016	1037	2570	2435	1257	1651	S. 61 19 W.	.26	S. 9 W.	.04
		Winter	486	856	1304	1080	927	2592	2917	1159	835	S. 60 54 W.	.27	S. 17 W.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 69 55 W.	.25		
	Motion of clouds.	Spring	345	389	995	722	195	1071	3117	858	...	S. 85 0 W.	.35	S. 73 E.	.01
		Summer	277	318	1028	491	154	968	3434	961	...	S. 89 55 W.	.42	N. 65½ W.	.07
		Autumn	282	394	1375	691	218	1214	3341	997	...	S. 83 50 W.	.32½	S. 78½ E.	.03½
		Winter	247	301	1416	908	177	1105	3735	1026	...	S. 82 3 W.	.34	S. 44 E.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 85 26 W.	.36		
	2 preceding combined.	Spring	1034	1648	2552	1734	839	3071	5783	2456	1109	S. 86 23 W.	.23½	N. 42 E.	.06½
		Summer	736	1103	2036	1211	827	3498	5964	2262	2131	S. 80 43 W.	.33	N. 78½ W.	.05
		Autumn	789	1298	2347	1707	1255	3784	5776	2254	1651	S. 71 46 W.	.28	S. 19½ E.	.02½
		Winter	733	1157	2720	1988	1104	3697	6652	2185	835	S. 70 56 W.	.29½	S. 3 W.	.03½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 77 22 W.	.28		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.41	4.44	5.67	7.14	5.91
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.28	1.13	1.29	2.06	1.41
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.85	1.56	2.07	2.71	2.05
Excess of the latter over the former	+.57	+.43	+.78	+.65	+.64

[2] Computed from the resultants for the seasons.

(Nos. 117 and 118.) **Michigan,** latitude 43° to 45°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Forestville,	U. S. Lake Survey,	0	2	1858.
Grand Haven,	U. S. Lake Survey,	0	4	1859.
Grand Traverse,	H. R. Schetterly,	0	2	1854.
Homestead,	George G. Steele,	2	4	1865, 1866, 1867 and 1869.
Lower Saginaw,	James G. Birney,	0	4	1849.
Mill Point,	Rev. L. M. S. Smith,	2	0	1860, 1861 and 1862.
Muskegon,	H. A. Pattison,	1	3	1868 and 1869.
Old Mission,	C. P. Avery,	0	6	1869.
Ottawa Point,	U. S. Lake Survey,	1	4	1858 and 1859.
Pleasanton,	Joseph D. Millard,	1	2	1868 and 1869.
Samlac,	U. S. Lake Survey,	0	2	September and October, 1859.

(Nos. 117 and 118.) **Michigan.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
117. Surface winds at Grand Traverse in the year 1854.[1]	No. of observations.	November	4	0	3	6	21	5	38	7	...	S. 63° 12′ W.	.494		
		December	7	11	1	6	12	47	8	27	...	S. 71 44 W.	.412		
	No. of miles.	November	16	0	26	78	324	63	502	53	...	S. 53 38 W.	.588		
		December	24	28	12	28	40	345	36	280	...	S. 81 44 W.	.534		
	M'n vel. in miles p. h'r.	November	4.00	.0	8.67	13.00	15.43	12.60	13.21	7.57					
		December	3.43	2.55	12.00	4.67	3.33	7.34	4.50	10.37					
118. Aggregate number of observations at all stations.	Surface winds.	Spring	137	203	159	139	80	365	203	326	139	N. 75 36 W.	.17	N. 62° E.	.06
		Summer	148	258	136	175	96	500	332	347	94	N. 89 42 W.	.23	S. 47 W.	.02
		Autumn	149	172	142	157	123	423	293	320	108	S. 85 20 W.	.23½	S. 26 W.	.04
		Winter	220	233	149	167	72	546	249	396	121	N. 79 37 W.	.23	N. 31 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	N. 85 41 W.	.22½		
	Motion of clouds.	Spring	15	39	31	35	21	102	112	75	...	S. 81 46 W.	.36	S. 50½ E.	.03½
		Summer	29	65	78	41	33	175	164	119	...	S. 83 4 W.	.31½	S. 83 E.	.07
		Autumn	51	57	26	35	70	194	198	183	...	S. 88 17 W.	.46	N. 78½ W.	.08
		Winter	43	43	18	56	43	139	151	139	...	S. 87 58 W.	.41	N. 56 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 85 39 W.	.38½		
	2 preceding combined.	Spring	152	242	190	174	101	467	315	401	139	N. 83 17 W.	.20½	N. 71 E.	.05½
		Summer	177	323	214	216	129	675	496	466	94	S. 88 3 W.	.25½	S. 15½ E.	.02
		Autumn	200	229	168	192	193	617	491	503	108	S. 86 41 W.	.30	S. 57 W.	.05
		Winter	263	276	167	223	115	685	400	535	121	N. 83 54 W.	.27	N. 19½ W.	.02
		The year[2]	...	...	...	...	...	...	...	...	...	N. 88 26 W.	.26		

[1] From this table we obtain the following summary of results:—

	Autumn.	Winter.
Average velocity of all winds in miles per hour	11.93	6.66
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	6.24	2.74
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	7.02	3.56
Excess of the latter over the former	+.78	+ .82

[2] Computed from the resultants for the seasons.

(Nos. 119 to 123.) **Southeastern Michigan.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Ann Arbor,	A. Winchell & L. Woodruff,	9	2	1849 to 1856 inclusive.[1]
Brest,	Dr. Thomas Whelpley,	1	1	1851 and 1854.
Brooklyn,	Dr. M. K. Taylor,	1	2	1852, 1853 and 1854.
Clinton,	Elmore Wainwright,	0	9	1851.
Coldwater,	N. C. Southworth,	1	6	1868 and 1869.
Dearbornville,	Post Surgeon at the Arsenal,	1	7	1842 and 1843.
Detroit,	Rev. George Duffield,	3	6	July, 1839, to December, 1842, inclusive.
Detroit Barracks,	Post Surgeon,	8	11	1840 to 1846 and 1849 to 1851 both inclusive.
Flint,	Dr. D. Clark,	1	0	1854.
Fort Gratiot,	Post Surgeon,	15	5	1831 to 1836, 1840 to 1846 and 1849 to 1852, all inclusive.

[1] Two independent series of observations, one made at Michigan University and the other 3½ miles E.S.E. of it.

(Nos. 119 to 123.) **Southeastern Michigan.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Howell,	Dr. H. R. Schetterly,	1	0	1850 and 1851.
Lansing,	Prof. R. C. Kedzie,	6	2	1863 to 1869 inclusive.
Manchester,	F. M. Reasner, M.D.,	0	4	1865.
Monroe,	Misses H. J. and F. E. Whelpley and others,[1]	14	9	1854 to 1869 inclusive.
Pontiac,	James A. Weeks,	1	7	1864 and 1865.
Redford Centre,	Charles C. Smith, M.D.,	0	3	1861.
Romeo,	S. L. and G. P. Andrews,	1	3	1856 and 1857.
Ypsilanti,	Miss G. Webb and C. S. Woodward,	5	4	1859 to 1864 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.															
		North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.
119. Detroit.	January	40	0	12	0	36	12	4	8	16	4	0	0	12	0	12	4
	February	32	4	8	0	28	4	12	8	24	8	0	0	12	0	0	0
	March	48	4	24	0	96	4	52	20	80	0	4	0	8	4	8	16
	April	40	0	20	0	72	44	40	32	76	4	4	0	20	0	8	8
	May	32	4	16	0	20	8	28	32	44	20	16	0	20	0	32	4
	June	24	0	8	0	20	12	12	12	72	12	0	4	16	0	12	4
	July	72	0	9	0	24	9	9	6	72	15	9	3	9	0	3	6
	August	60	0	6	0	51	3	15	0	57	3	12	0	36	3	6	0
	September	63	9	18	0	30	0	9	9	39	9	3	0	21	0	12	15
	October	36	15	3	3	48	3	12	24	33	15	3	0	21	0	3	3
	November	12	9	12	0	18	12	15	9	72	9	18	0	18	3	3	3
	December	63	0	12	3	30	9	24	6	12	6	0	0	15	0	6	3
	The year	552	45	148	6	473	120	232	166	597	105	69	7	208	10	105	66

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.															
		South.	S. by W.	S. S. W.	S. W. by S.	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.
119. Detroit.	January	24	40	16	12	148	4	60	24	88	4	36	4	84	12	52	4
	February	4	0	16	20	148	16	60	28	88	4	36	4	56	8	36	12
	March	0	0	4	8	100	20	28	16	52	8	12	0	68	4	44	12
	April	8	0	16	0	140	12	44	4	32	4	32	4	36	4	16	4
	May	24	12	20	16	124	44	12	16	40	8	40	8	76	8	20	0
	June	48	0	32	12	216	8	52	16	36	4	4	4	48	8	12	0
	July	33	3	15	15	177	33	39	12	72	3	21	0	30	0	30	12
	August	69	0	30	9	129	12	51	3	75	6	3	0	84	3	15	0
	September	66	9	24	6	102	12	30	6	75	3	3	0	75	9	39	24
	October	39	3	21	0	171	6	48	30	75	9	15	6	45	3	39	12
	November	18	3	9	6	78	12	69	30	126	12	21	0	75	6	24	6
	December	24	0	3	0	159	9	63	12	81	0	9	0	120	6	57	12
	The year	357	70	206	104	1692	188	556	197	840	65	232	30	797	71	384	98

From the dates given above it will be seen that we have only three-quarters as many observations in the first half of the year as in the last half; and so to equalize their influence on the general result for the year, the former have, in this table, been multiplied by 4, and the latter by 3. The direction of the resultant for the year is S. 89° 0′ W., and its ratio to the sum of the winds .25.

[1] Capt. A. D. Perkins and G. W. Bowlsby.

(Nos. 120 to 122.) **Southeastern Michigan.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
120. Dearbornville Arsenal.	Spring	24	51	93	32	69	58	150	59	...	S. 69° 9′ W.	.15	N. 83½° E.	.16
	Summer	19	51	43	27	100	65	96	27	...	S. 34 41 W.	.26	S. 47 E.	.21
	Autumn	21	4	8	1	22	15	90	21	...	N. 87 3 W.	.57	N. 70 W.	.29
	Winter	27	26	32	19	54	59	103	75	...	S. 82 25 W.	.34	N. 54 W.	.05
	The year[2]	...	...	...	...	...	...	...	...	...	S. 77 35 W.	.31		
121. Detroit Barracks.	January	124	102	86	50	109	173	184	131					
	February	96	110	69	39	108	224	134	99					
	March	109	203	112	38	84	166	128	101					
	April	102	172	158	76	107	104	144	59					
	May	91	176	122	66	103	135	197	57					
	June	98	121	124	49	110	109	164	41					
	July	97	119	72	37	109	101	138	34					
	August	83	103	119	36	106	63	149	63					
	September	81	84	87	33	120	88	140	70					
	October	89	44	64	25	113	97	179	97					
	November	82	49	64	21	78	80	290	56					
	December	89	57	42	35	95	88	206	119					
	Spring	302	551	392	180	294	405	469	217	...	N. 0 2 E.	.05	N. 75 E.	.15
	Summer	278	343	315	122	325	273	451	138	...	N. 81 58 W.	.04½	S. 87 E.	.10
	Autumn	252	177	215	79	311	265	609	223	...	S. 87 58 W.	.26	S. 80 W.	.12
	Winter	309	269	197	124	312	485	524	349	...	N. 89 41 W.	.25	S. 84 W.	.11
	The year[2]	...	...	...	...	...	...	...	...	...	N. 85 9 W.	.14		
121(*a*). Fort Gratiot.	January	82	106	47	130	138	205	176	140					
	February	68	105	32	130	79	265	108	126					
	March	111	164	67	99	101	178	134	147					
	April	96	277	57	131	98	146	74	104					
	May	81	271	78	118	122	150	114	70					
	June	65	226	67	135	143	121	36	53					
	July	67	243	68	108	109	192	44	57					
	August	78	182	64	142	106	147	67	89					
	September	60	171	59	135	100	169	55	89					
	October	49	115	42	123	121	213	99	122					
	November	36	82	40	125	99	218	123	127					
	December	86	96	34	99	113	239	85	129					
	Spring	508	1024	230	448	629	866	474	649	...	N. 64 10 W.	.06	N. 28 E.	.12
	Summer	490	931	203	505	706	932	235	447	...	S. 1 51 E.	.06	N. 78 E.	.12
	Autumn	261	584	153	531	648	1160	449	610	...	S. 45 48 W.	.24	S. 36 W.	.10
	Winter	368	467	177	487	698	1109	601	707	...	S. 58 42 W.	.26	S. 66 W.	.12
	The year[2]	...	...	...	...	...	...	...	...	...	S. 53 47 W.	.14		
122. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	248	532	326	277	191	665	396	726	...	N. 59 47 W.	.157	N. 52½ E.	.14
	Summer	173	289	169	273	275	760	317	712	...	S. 81 3 W.	.242	S. 5 W.	.04
	Autumn	193	301	127	241	267	830	341	684	...	S. 81 30 W.	.286	S. 51½ W.	.06
	Winter	188	345	178	272	209	872	404	772	...	S. 87 35 W.	.283	S. 81 W.	.05
	The year[2]	...	...	...	...	...	...	...	...	...	S. 89 15 W.	.235		
No. of miles.	Spring	1592.5	3382.5	1898.5	1618	8685	5514	3557.5	6477.5	...	N. 68 7 W.	.270	N. 49 E.	.11
	Summer	954	1104	6295	1227.5	1147	4330.5	1646	5026	...	N. 87 58 W.	.334	S. 17½ W.	.02
	Autumn	1838	1717	570	935.5	1695	5747.5	3309	4203	...	S. 87 8 W.	.369	S. 42 W.	.06
	Winter	1582	2339.5	959	1423	1208.5	6643	3595	6065	...	N. 86 5 W.	.363	S. 81 W.	.03
	The year[2]	...	...	...	...	...	...	...	...	...	N. 86 42 W.	.329		
M'n vel. in miles p. h'r.	Spring	6.42	6.36	5.82	5.84	4.55	8.29	8.98	8.92					
	Summer	5.51	3.82	3.72	4.50	4.17	5.70	5.19	7.06					
	Autumn	9.52	5.70	4.49	3.88	6.35	6.92	9.70	6.14					
	Winter	8.41	6.78	5.39	5.23	5.78	7.62	8.90	7.86					

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.44	5.41	6.71	7.35	6.73
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.17	1.31	1.92	2.08	1.58
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	2.01	1.81	2.48	2.67	2.21
Excess of the latter over the former	+.84	+.50	+.56	+.59	+.63

[2] Computed from the resultants for the seasons.

(No. 123.) **Southeastern Michigan.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
123. Aggregate number of observations at all stations.	Surface winds.	Spring	1635	3965	1852	2211	1603	4481	2839	3694	630	N. 73° 24′ W.	.11	N. 50° E.	.12½
		Summer	1667	2904	1581	2213	2123	5396	2731	3068	1094	S. 65 21 W.	.17	S. 65 E.	.05
		Autumn	1264	2179	1093	1977	1944	5621	3014	3524	925	S. 69 39 W.	.27	S. 49 W.	.06½
		Winter	1374	2216	1023	1933	1733	6141	3107	4266	618	S. 77 9 W.	.30	S. 80½ W.	.09½
		The year	5940	11264	5549	8334	7403	21639	11691	14552	3267	S. 76 10 W.	.20½		
	Motion of clouds.	Spring	224	897	294	509	150	1197	1002	1648	...	N. 68 52 W.	.31½	N. 43 E.	.10
		Summer	329	627	217	550	200	1721	1310	1614	...	N. 87 39 W.	.40	S. 50 W.	.05
		Autumn	258	550	186	588	195	1512	973	1616	...	N. 87 19 W.	.37½	S. 23 W.	.03
		Winter	213	628	189	535	187	1606	931	1784	...	N. 84 38 W.	.38	S. 56½ W.	.02
		The year	1024	2702	886	2182	732	6036	4216	6662	...	N. 82 54 W.	.35½		
	2 preceding combined.	Spring	1859	4862	2146	2720	1753	5678	3841	5342	630	N. 71 31 W.	.15	N. 49½ E.	.12
		Summer	1996	3531	1798	2763	2323	7117	4041	4682	1094	S. 76 13 W.	.21½	S. 48½ E.	.03½
		Autumn	1522	2729	1279	2565	2139	7133	3987	5140	925	S. 75 58 W.	.29	S. 47½ W.	.06
		Winter	1587	2844	1212	2468	1920	7747	4038	6050	618	S. 81 46 W.	.31	S. 78 W.	.07½
		The year	6964	13966	6435	10516	8135	27675	15907	21214	3267	S. 82 58 W.	.23½		

(Nos. 124 and 125.) **Northwestern Ohio.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date and remarks.
Belle Centre,	Rev. R. Shields and J. C. Smith,	0	7	1857 and 1861.
Bellefontaine,	Joseph Shaw,	3	5	1856 to 1860 inclusive.
Bowling Green,	W. R. Peck & John Clarke,	5	8	1861 to 1863 and 1867 to 1869 both inclusive.
Croton,	Rev. E. Thompson and M. Sperry,	3	0	1860 to 1863 inclusive.
Edgerton,	A. B. Knight,	0	2	1869.
Fremont,	....	0	1	1851.
Geneva Hall,	Rev. J. R. W. Sloane,	0	4	1854.
Homer,	Thos. F. Withrow,	0	1	1852.
Kelly's Island,	Geo. C. Huntingdon,	9	3	1860 to 1869 inclusive.
Kenton,	C. H. Smith, M.D.,	3	6	1862 and 1866 to 1869 inclusive.
Lewisville,	....	0	2	1852.
Marion,	H. A. True and C. Chase,	4	11	1865 to 1869 inclusive.
Mount Tabor,	William Lapham,	0	7	1849 and 1850.
Mount Vernon,	F. A. Benton,	1	4	1852, 1854 and 1855.
Mount Victory,	W. C. Hampton,	0	4	1860.
New Westfield,	A. E. Jerome,	0	10	1862 and 1863.
North Bass Island,	Geo. R. Morton,	0	7	1869.
North Fairfield,	O. Burras,	2	11	1867, 1868 and 1869.
Northwood,	Rev. J. R. W. Sloane,	1	0	1858.
Norwalk,	G. A. Hyde and Rev. A. Newton,	8	1	1854, 1855 and 1861 to 1868 inclusive.
Perrysburg,	F. Hollenbeck,	0	8	1854.
Republic,	Stephen S. Dorsey,	0	2	1851.
Sandusky,	Thomas Neill and others,	2	8	1843, 1844, 1845, 1868 and 1869
Sidney,	Joseph Shaw,	1	0	1857.
Toledo,	J. B. Trembley, M.D.,	8	11	1861 to 1869 inclusive.
Troy,	Charles L. McClung,	3	4	1860 to 1863 inclusive.
Urbana,	Prof. M. G. Williams,	12	10	1855 to 1869 inclusive, except 1860.
West Barre,	....	0	2	1853.
Yankeetown,	A. Jacque,	0	2	1854.

(Nos. 124 and 125.) **Northwestern Ohio.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
124. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	75	162	69	162	155	451	404	276	...	S. 71°48′ W.	.327		
		Summer	35	100	74	179	124	371	242	155	...	S. 49 2 W.	.314		
		Autumn	28	129	93	192	91	345	241	200	...	S. 55 34 W.	.251		
		Winter	79	138	96	172	157	500	463	225	...	S. 65 49 W.	.349		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 61 4 W.	.307		
	No. of miles.	Spring	805	1992	519	1811	1473	5324	3392	3759	...	S. 76 17 W.	.315		
		Summer	490	1037	430	1867	1376	5619	2827	2515	...	S. 58 58 W.	.391		
		Autumn	341	1269	562	2347	1393	4440	2525	2604	...	S. 54 39 W.	.322		
		Winter	625	1424	759	1797	1358	5362	4773	3432	...	S. 73 28 W.	.375		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 65 20 W.	.348		
	M'n vel. in miles p. h'r.	Spring	10.73	12.30	7.52	11.18	9.50	11.80	8.40	13.62					
		Summer	14.00	10.37	5.81	10.43	11.10	15.15	11.68	16.23					
		Autumn	12.18	9.84	6.04	12.22	15.31	12.87	10.48	13.02					
		Winter	7.91	10.32	7.91	10.45	8.65	10.72	10.31	15.25					
125. Aggregate number of observations at all stations.	Surface wind.	Spring	1414	2907	1460	1427	1769	3839	3320	2673	1342	S. 87 53 W.	.18	N. 31½° E.	.09
		Summer	1372	2652	1172	1202	1709	4594	2746	1946	2207	S. 71 10 W.	.19	N. 63 E.	.05
		Autumn	1212	1800	840	1478	2278	4858	3096	2769	1872	S. 66 31 W.	.27½	S. 43 W.	.03
		Winter	773	1607	1146	1538	2201	4973	4261	2213	1472	S. 61 8 W.	.34	S. 41½ W.	.10½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 69 3 W.	.24		
	Motion of clouds.	Spring	424	860	343	336	380	2549	2665	1273	...	S. 83 14 W.	.47	N. 53 E.	.04
		Summer	350	702	230	295	308	2739	2318	973	...	S. 77 5 W.	.52	S. 8½ W.	.04
		Autumn	437	704	254	260	361	2485	2312	1228	...	S. 82 54 W.	.50	N. 5½ E.	.03
		Winter	296	660	316	337	283	2499	2885	1080	...	S. 80 10 W.	.53½	S. 71 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 80 48 W.	.50½		
	2 preceding combined.	Spring	1838	3767	1803	1763	2149	6388	5985	3946	1342	S. 85 19 W.	.26	N. 35 E.	.08
		Summer	1722	3354	1402	1497	2017	7333	5064	2919	2207	S. 74 18 W.	.28	N. 77 E.	.04
		Autumn	1649	2504	1094	1738	2639	7343	5408	3997	1872	S. 73 13 W.	.34½	S. 57½ W.	.03
		Winter	1069	2267	1462	1875	2494	7472	7146	3293	1472	S. 68 27 W.	.39	S. 45 W.	.08
		The year[2]	...	...	...	...	...	...	...	...	...	S. 74 31 W.	.32		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.86	12.62	11.28	10.67	11.36
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	3.55	3.97	2.83	3.72	3.49
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	3.42	4.93	3.63	4.00	3.95
Excess of the latter over the former	—.13	+.96	+.80	+.28	+.46

[2] Computed from the resultants for the seasons.

(Nos. 126 to 129.) **Northeastern Ohio.**

Observed as follows :—

Place of observations.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Andrews,[1]				
Arcola,	Miss A. Cunningham,	0	2	1855.
Ashtabula,	?	0	5	1843.
Austinburg,	D. S. Alvord and others,	3	2	1862 to 1866 inclusive.
Avon,	Rev. L. F. Ward,	1	0	1859.
Berea (Baldwin's Inst.),	Prof. G. M. Barber,	0	1	1855.
Breckville,	Rev. S. L. Hillier,	0	6	1859 and 1860.
Cambridge,	Mr. Brown,	0	1	1843.
Cardington,	H. A. Schauber,	0	1	1863.
Cleveland,	G. A. Hyde and Mrs. Hyde,	13	2	1855 to 1859 and 1861 to 1869 both inclusive.
Conneaut,	Dibble,	0	1	1843.
Coshocton,	Thos. H. Johnson,	0	6	1861 and 1862.
Cuyahoga Falls,	D. M. Rankin,	0	7	1864 and 1865.
East Cleveland,	Mrs. M. A. Pillsbury,	2	11	1861, 1862, 1865 and 1866.
East Fairfield,	S. B. McMillan,	6	5	1860 to 1867 inclusive.
Edinburg,	Smith Sanford,	1	10	1857 and 1858.
Freedom,	H. M. and W. Davidson,	1	5	1860, 1861 and 1862.
Gambier,	C. A. Stillwell and others,	0	3	1869.
Garrettsville,	Warren Pierce,	0	11	1861 and 1862.
Gilmore,	S. M. Moore,	0	10	1869.
Granville,	P. Carter and S. N. Sanford,	3	4	1843, 1854, 1855 and 1856.
Hiram,	S. L. Hillier and S. M. Luther,	3	3	1855 to 1858 inclusive.
Hudson,	Prof. E. Loomis and others,[2]	9	4	1838 to 1844 and 1861 to 1863 both inclusive.
Huron,	Edmund W. West,	0	6	1857.
Iberia,	S. T. Boyd,	0	5	1859.
Jefferson,	James D. Herrick,	2	10	1856, 1857 and 1858.
Keene,	E. C. Bidwell and E. Spooner,	1	1	1851 and 1854.
Little Mountain,	E. J. Ferriss,	2	5	1867, 1868 and 1869.
Madison,	Rev. L. S. Atkins and Mrs. A. C. King,	8	6	1856 to 1858 and 1860 to 1863 both inclusive.
Mansfield,	F. A. Benton,	0	9	1851 and 1852.
Martin's Ferry,	Charles R. Shreve,	0	5	1867.
Medina,	Rev. L. F. Ward,	0	10	1857.
Middlebury,	Michael Beecher,	0	5	1849.
Milnersville,	Rev. D. Thompson,	7	5	1862 to 1869 inclusive.
Montville,	William P. Clarke,	4	1	1859 to 1863 inclusive.
Mount Pleasant,	David H. Tweedy,	0	5	1860.
Mount Union,	Newton Anthony,	0	5	1860.
Newark,	L. M. Dayton and Isaac Dill,	3	11	1855 and 1860 to 1863 inclusive.
New Athens,	Mason,	0	6	1843 and 1844.
New Concord,	Prof. S. G. Irvine,	0	11	1849 and 1850.
New Lisbon,	J. F. Benner,	10	9	1855, 1858, 1859 and 1861 to 1869 inclusive.
Norton,	H. D. Watkins,	0	3	1849.
Oberlin,	Rev. J. H. Fairchild and others,	3	7	1854 to 1857 inclusive.
Ravenna,	....	0	1	1843.
Rockport,	Edward Colbrunn,	4	11	1859 to 1863 inclusive.
Savannah,	Dr. John Ingram,	8	11	1854 to 1863 inclusive.
Saybrook,	Rev. L. S. Atkins and J. B. Fraser,	2	7	1862 to 1866 inclusive.
Seville,	Rev. L. F. Ward,	1	7	1861 and 1862.
Smithfield,	D. H. Tweedy,	0	2	1866.
Smithville,	J. H. Meyers and W. Hoover,	0	11	1864, 1865, 1868 and 1869.
Steubenville,	Roswell Marsh and J. B. Doyle,	17	3	1833 to 1846 and 1866 to 1869 both inclusive.
Twinsburg,	N. A. Chapman,	0	4	1860.
Unionville,	Miss Ardelia Cunningham,	1	2	1855 and 1856.
Welchfield,	B. F. Abell,	9	2	1857 to 1866 inclusive.
Wellington,	Rev. L. F. Ward,	0	4	1863.
West Bedford,	H. D. McCarty,	0	6	1857.
Western Star,	A. S. Stuver,	0	5	1861.
Westerville,	John Haywood and H. A. Thompson,	10	1	1858 to 1869 inclusive, except 1860.
Williamsport,	Dr. W. W. Spratt,	0	5	1860 and 1861.
Wooster,	E. Pardee and M. Winger,	2	1	1849, 1864 and 1865.

[1] Same as Williamsport, which see.
[2] Prof. C. A. Young, A. C. Barrows, E. W. Stuart, J. C. Elliot, W. Pettingill and H. R. Watterson.

(Nos. 126 and 127.) **Northeastern Ohio.**—*Continued.*

126. Steubenville, 14 years, 1833 to 1846.

Months.	N.E	S.E.	S.W.	N.W.	Direction of resultant.	Ratio.	Months.	N.E.	S.E.	S.W.	N.W.	Direction of resultant.	Ratio.
January	18	40	160	216	N. 83° 54′ W.	.49	July	7	30	183	214	N. 88° 41′ W.	.51
February	15	28	150	202	N. 82 49 W.	.53	August	15	28	155	236	N. 78 57 W.	.57
March	14	33	148	239	N. 78 3 W.	.58	September	12	34	135	239	N. 75 58 W.	.59
April	32	36	148	204	N. 79 37 W.	.49	October	17	35	156	226	N. 81 3 W.	.53
May	28	35	155	216	N. 80 3 W.	.50	November	16	37	146	221	N. 80 14 W.	.51
June	8	24	170	218	N. 84 52 W.	.55	December	24	25	153	232	N. 76 49 W.	.53
							The year	206	385	1859	2663	N. 80 58 W.	.55

127. Western Reserve College, Hudson.

Prof. Elias Loomis, who made these observations with great minuteness in regard to the direction of the wind, resolved them in the direction of the cardinal points, as given in the table below. For the surface winds, both the number of observations and the estimated force were taken into account; for the motion of the clouds, the former only.

	Surface winds.									
	9 o'clock A. M.					3 o'clock P. M.				
	N.	E.	S.	W.	Direction of resultant.	N.	E.	S.	W.	Direction of resultant.
January	93.7	73.9	153.2	252.2	S. 71° 32′ W.	111.3	58.4	140.8	285.0	S. 82° 34′ W.
February	90.4	57.1	124.2	243.2	S. 79 41 W.	117.4	38.4	133.3	283.3	S. 86 17 W.
March	132.3	85.4	94.4	230.2	N. 75 20 W.	173.1	68.7	93.4	270.7	N. 68 28 W.
April	128.5	99.9	107.5	200.4	N. 78 12 W.	203.6	69.6	108.0	234.0	N. 59 50 W.
May	113.7	91.8	102.6	227.4	N. 85 19 W.	202.4	67.8	108.0	243.3	N. 61 44 W.
June	110.1	63.8	133.2	226.1	S. 81 55 W.	176.5	52.3	130.8	251.6	N. 77 6 W.
July	112.2	66.8	97.9	224.4	N. 84 50 W.	215.2	37.0	92.7	265.0	N. 61 45 W.
August	118.0	92.2	103.4	192.0	N. 81 41 W.	207.5	68.2	86.0	205.0	N. 48 24 W.
September	91.5	86.1	133.1	197.6	S. 69 33 W.	165.9	68.0	123.1	230.4	N. 75 15 W.
October	81.8	65.6	132.1	233.3	S. 73 19 W.	125.7	49.1	123.6	284.1	N. 89 29 W.
November	60.0	65.7	121.5	237.0	S. 70 14 W.	81.5	57.5	105.6	249.9	S. 82 52 W.
December	94.9	72.6	122.6	278.8	S. 82 30 W.	124.3	65.2	113.6	281.5	N. 87 11 W.
The year	1227.0	921.1	1425.8	2742.7	S. 83 46 W.	1904.2	700.1	1359.0	3083.8	N. 77 7 W.

	Motion of clouds.											
	9 o'clock A. M.						3 o'clock, P. M.					
	N.	E	S.	W.	Direction of resultant.	Ratio.[1]	N.	E.	S.	W.	Direction of resultant.	Ratio.[1]
January	36.3	11.7	57.8	131.6	S. 79° 50′ W.	.51	33.8	10.9	63.4	136.3	S. 76° 44′ W.	.52
February	33.9	8.7	43.1	126.8	S. 85 31 W.	.56	33.1	5.7	44.8	129.5	S. 84 36 W.	.58
March	43.4	17.9	33.6	97.5	N. 83 0 W.	.42	38.0	15.1	31.7	110.8	N. 86 13 W.	.49
April	35.1	16.5	39.9	90.4	S. 86 17 W.	.41	39.6	10.6	38.1	102.4	N. 89 4 W.	.48
May	33.2	14.2	37.3	98.4	S. 87 11 W.	.46	33.3	15.5	41.4	115.9	S. 85 24 W.	.49
June	50.0	10.7	49.4	116.4	N. 89 40 W.	.47	40.5	13.1	48.0	134.5	S. 86 30 W.	.52
July	55.6	11.2	36.1	118.8	N. 79 44 W.	.49	58.1	13.2	46.6	133.8	N. 84 31 W.	.48
August	64.8	20.5	45.4	109.6	N. 77 40 W.	.37	60.6	30.2	60.0	113.2	N. 89 37 W.	.31
September	47.3	20.7	36.0	94.1	N. 81 15 W.	.37	42.8	21.6	46.8	105.3	S. 87 17 W.	.39
October	48.7	11.2	49.8	118.6	S. 89 23 W.	.47	47.4	8.8	40.1	127.2	N. 86 28 W.	.53
November	40.6	20.3	54.1	114.7	S. 81 50 W.	.41	39.1	13.4	57.0	125.9	S. 80 58 W.	.48
December	40.8	20.7	48.2	125.3	S. 85 59 W.	.45	40.9	15.5	50.4	127.6	S. 85 9 W.	.48
The year	529.8	184.3	531.0	1342.2	S. 88 57 W.	.52	507.3	173.6	568.2	1462.4	S. 87 18 W.	.54

If we combine the observations of the motion of the clouds at 9 o'clock A. M. with those at 3 o'clock P. M., the direction of the resultant becomes S. 88° 37′ W., and the observations by the vane show about the same result, if we take into account only their number. But if we assume that the figures by which the force is indicated in the register are proportional to the velocity of the wind, and make an allowance accordingly, the direction becomes N. 85° 17′ W. The average force of each of the several winds, deduced from observations made during the year 1841 and parts of 1838 and 1840, and expressed in terms of the force numbers used in the registers, was as follows :—

North 2.12, N. by E. 2.39, N.N.E. 2.20, N.E. by N. 2.09, N.E. 2.23, N.E. by E. 2 00, E.N.E. 1.80, E. by N. 1.79 ; East 2.00, E. by S. 2.16, E.S.E. 1.71, S.E. by E. 1.86, S.E. 1.67, S.E. by S. 1.37, S.S.E. 1.59, S. by E. 1.78; South 1.85, S. by W. 1.77, S.S.W. 1.79, S.W. by S. 1.68, S.W. 2 03, S.W. by W. 1.98, W.S.W. 2.20, W. by S. 2.41 ; West 2.46, W. by N. 2.83, W.N.W. 2.90, N.W. by W. 2 87, N.W. 2.84, N.W. by N. 2.43, N.N.W. 2.52, N. by W. 2.30.

[1] The numbers in this column express the ratio that the resultants bear to the sum of the winds, after being resolved in the direction of the cardinal points, and are somewhat less than if they had been computed from the original observations.

(Nos. 128 and 129.) **Northeastern Ohio.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
128. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	605	659	208	486	577	1484	1239	1291	...	N. 89° 38′ W.	.307		
		Summer	400	496	153	321	437	1607	970	884	...	S. 78 1 W.	.333		
		Autumn	324	544	211	625	652	1436	794	964	...	S. 63 41 W.	.255		
		Winter	210	319	178	554	631	1566	953	945	...	S. 62 2 W.	.382		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 73 18 W.	.313		
	No. of miles.	Spring	4646	6146	1152	3740	4350	13154	11287	11535	...	N. 87 38 W.	.338		
		Summer	2331	2689	527	1458	2195	10549	6376	6423	...	S. 82 42 W.	.396		
		Autumn	2835	3876.5	1256	4035	4487	13045	7497	9088	...	S. 74 22 W.	.321		
		Winter	1432	1975	965	3309	4481	14186	9906	8036	...	S. 70 27 W.	.437		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 79 22 W.	.366		
	M'n vel. in miles p. h'r.	Spring	7.68	9.33	5.54	7.70	7.54	8.86	9.11	8.93					
		Summer	5.83	5.42	3.44	4.54	5.02	6.56	6.57	7.27					
		Autumn	8.75	7.13	5.94	6.46	6.88	9.08	9.44	9.43					
		Winter	6.82	6.19	5.42	5.97	7.10	9.06	10.39	8.50					
129. Aggregate number of observations at all stations.	Surface winds.	Spring	3376	4093	1821	3828	4025	8197	5941	7383	1467	S. 83 48 W.	.24	N. 16° E.	.06
		Summer	3514	3321	1200	3026	4194	8315	4649	5863	2393	S. 76 49 W.	.25	N. 21 E.	.03
		Autumn	2243	2334	995	3043	4064	6938	3987	5188	946	S. 65 22 W.	.25	S. 55 E.	.03½
		Winter	1772	2338	1312	3240	4383	8602	5351	5899	963	S. 63 30 W.	.34	S. 36 W	.08½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 71 15 W.	.28		
	Motion of clouds.	Spring	829	1015	568	915	777	4088	5050	3315	...	S. 87 6 W.	.50½	S. 44 E.	.02
		Summer	852	1050	510	495	559	3837	5306	3046	...	N. 89 9 W.	.55	N. 60 W.	.04
		Autumn	785	1071	611	734	674	3513	4446	3273	...	N. 88 36 W.	.49	N. 40 E.	.04
		Winter	591	741	636	852	740	4069	4731	3103	...	S. 83 32 W.	.52½	S. 5½ W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 88 22 W.	.51½		
	2 preceding combined.	Spring	4205	5108	2389	4743	4802	12285	10991	10698	1467	S. 85 20 W.	.32	N. 36½ E.	.05
		Summer	4466	4371	1710	3521	4753	12152	9955	8909	2393	S. 83 34 W.	.34	N. 21 E.	.03
		Autumn	3028	3405	1606	3777	4738	10451	8433	8461	946	S. 77 24 W.	.34½	S 45 E.	.01
		Winter	2363	3079	1948	4092	5123	12671	10082	9602	963	S. 71 44 W.	.41½	S. 36 W.	.08
		The year[2]	...	...	...	...	...	...	...	...	...	S. 79 16 W.	.35		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.55	6.18	8.31	8.27	7.83
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.62	2.06	2.12	3.16	2.45
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.89	2.45	2.67	3.61	2.87
Excess of the latter over the former	+.27	+.39	+.55	+.45	+.42

[2] Computed from the resultants for the seasons.

(Nos. 130 to 134.) **Canada,** south of latitude 45°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time.		Date.
		yrs.	mos	
Kingston,	Observatory,	1	8	
Niagara,	H. Phillips,	0	10	1861 to 1862.
Toronto,	Observatory,	10	0	1853 to 1862 inclusive.
Wilberforce,	....	0	1	1831.

(Nos. 130 to 134.) **Canada.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
130. S'thwest'n Canada.[1]	Apr. & May	9	...	21	...	28	...	4	...	43	...	23	..	22	...	7	...	1	S. 4° 12′ E.	.21	N. 57° E.	.11	61
	June	8	...	6	...	3	...	1	...	26	...	23	...	6	...	1	...	0	S. 26 35 W.	.45	S. 44 W.	.18½	30
	Autumn	26	...	15	...	32	...	4	...	57	...	31	...	22	...	17	...	3	S. 17 36 W.	.12	N. 15 E.	.16	91
	Winter	22	...	15	...	55	...	15	...	117	...	62	...	39	...	26	...	8	S. 11 44 W.	.34	N. 2½ E.	.07	149
	The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 16 19 W.	.28			
131. Toronto, surface winds.[2]	January	510	359	420	289	349	168	92	102	108	311	685	1131	795	506	516	609	490					
	February	453	315	302	314	407	146	95	106	128	355	519	748	840	634	517	552	337					
	March	294	165	233	488	536	189	176	108	186	349	558	539	810	942	978	601	283					
	April	524	375	383	644	878	371	215	195	253	388	311	291	387	522	502	617	344					
	May	513	276	374	746	838	412	220	240	411	573	279	194	272	421	521	784	402					
	June	397	200	276	537	675	336	185	222	521	669	491	247	372	374	596	594	364					
	July	434	295	229	420	553	377	282	426	635	707	368	249	267	415	535	689	559					
	August	475	372	298	307	496	290	276	282	513	597	391	239	381	577	688	750	506					
	September	530	355	313	389	455	243	253	270	417	641	410	286	363	447	496	575	751					
	October	461	337	368	458	474	258	123	178	361	460	452	376	548	723	553	536	654					
	November	374	286	307	459	518	212	158	162	170	351	604	906	701	575	497	486	416					
	December	545	443	384	354	324	200	102	93	69	240	660	1041	869	528	536	616	436					
	Spring	1331	816	990	1878	2252	972	611	543	850	1310	1148	1024	1469	1885	2001	1966	1029	N. 20 51 W.	.14	N. 64 E.	.09	
	Summer	1306	867	803	1264	1724	1003	745	930	1669	1973	1250	735	1020	1366	1819	2033	1429	N. 68 30 W.	.05	S. 50 E.	.11	
	Autumn	1365	978	988	1306	1447	713	534	610	948	1452	1466	1568	1612	1745	1546	1597	1821	N. 62 16 W.	.15	S. 2 W.	.02	
	Winter	1508	1117	1106	957	1080	514	289	301	305	906	1864	2920	2504	1668	1569	1777	1263	N. 65 31 W.	.30	N. 75 W.	.15	
	The year	5510	3778	3887	5405	6503	3202	2179	2384	3772	5641	5728	6247	6605	6664	6935	7373	5542	N. 55 56 W.	.16			
132. Toronto, motion of upper clouds.	January	18	...	19	...	24	...	23	...	10	...	71	...	273	...	137	...	677					
	February	12	...	9	...	32	...	18	...	6	...	8	...	259	...	123	...	607					
	March	12	...	8	...	38	...	23	...	15	...	70	...	292	...	164	...	505					
	April	25	...	17	...	49	...	13	...	11	...	92	...	361	...	140	...	377					
	May	26	...	33	...	46	...	38	...	30	...	84	...	282	...	155	...	379					
	June	24	...	21	...	44	...	19	...	10	...	76	...	413	...	145	...	363					
	July	27	...	21	...	54	...	24	...	4	...	77	...	481	...	183	...	281					
	August	28	...	13	...	34	...	16	...	9	...	80	...	415	...	235	...	269					
	September	26	...	17	...	35	...	18	...	15	...	93	...	395	...	156	...	305					
	October	45	...	28	...	43	...	27	...	21	...	116	...	305	...	200	...	412					
	November	33	...	17	...	50	...	35	...	23	...	94	...	319	...	214	...	478					
	December	38	...	10	...	28	...	15	...	20	...	66	...	253	...	181	...	646					
	Spring	63	...	58	...	133	...	74	...	56	...	246	...	935	...	459	...	1261	N. 83 5 W.	.37	S. 50 W.	.03	
	Summer	79	...	55	...	132	...	59	...	23	...	233	...	1309	...	563	...	913	N. 74 52 W.	.33	N. 52 E.	.04	
	Autumn	104	...	62	...	128	...	80	...	59	...	303	...	1019	...	570	...	1195	N. 81 5 W.	.40½	S. 87 W.	.06	
	Winter	68	...	38	...	84	...	56	...	36	...	145	...	785	...	441	...	1930	N. 77 43 W.	.30	N. 89 W.	.05	
	The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 25 W.	.35			
133. 2 preceding combined.	Spring	1394	816	1048	1878	2385	972	685	543	906	1310	1394	1024	2404	1885	2460	1966	2290	N. 37 16 W.	.15	N. 66 E.	.08	
	Summer	1385	867	858	1264	1856	1003	804	930	1692	1973	1483	735	2329	1366	2382	2033	2342	N. 75 29 W.	.11	S. 45 E.	.08	
	Autumn	1469	978	1050	1306	1575	713	614	610	1007	1452	1769	1568	2631	1745	2116	1597	3016	N. 67 51 W.	.19	S. 43 W.	.01½	
	Winter	1576	1117	1144	957	1164	514	345	301	341	906	2009	2920	3289	1668	2010	1777	3193	N. 67 16 W.	.31	N. 75 W.	.12	
	The year	5814	3778	4100	5405	6980	3202	2448	2384	3946	5641	6655	6247	10653	6664	8968	7373	10841	N. 62 51 W.	.19			
134. Kingston.	Spring	3	...	47	...	6	...	8	...	17	...	52	...	44	...	4	...	...	S. 62 15 W.	.24			92
	Summer	10	...	51	...	25	...	13	...	55	...	80	...	38	...	19	...	...	S. 31 38 W.	.25			154
	Autumn	29	...	69	...	66	...	36	...	37	...	47	...	80	...	17	...	...	S. 68 35 E.	.04			182
	Winter	8	...	56	...	72	...	26	...	26	...	42	...	80	...	40	...	...	N. 77 19 W.	.02½			181
	The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 31 W.	.12			609

[1] Niagara and Wilberforce.

[2] In these observations the velocity of the wind was measured instrumentally, and the results from 1854 to 1859 inclusive, computed from the number of miles actually travelled, are as follows:—

	January.	February.	March.	April.	May.	June.	July.	August.	September.
Direction of resultant,	N. 77° W.	N. 67° W.	N. 70° W.	N. 23° W.	N. 20° E.	N. 73° W.	N. 66° W.	N. 58° W.	N. 61° W.
Ratio of resultant to sum of winds,	.38½	.39	.49½	.25	.26	.12	.07½	.27	.19½
Mean velocity in miles per hour,	8.56	8.87	9.86	8.50	7.37	5.91	5.44	6.24	5.96
Mean velocity in resultant direction,	3.29	3.45	4.89	2.14	1.91	0.69	0.41	1.68	1.16
	October.	**November**	**December.**	**Spring.**	**Summer.**	**Autumn.**	**Winter.**	**The year**	
Direction of resultant,	N. 62° W.	N. 85° W.	N. 70° W.	N. 41° W.	N. 64° W.	N. 73° W.	N. 67° W.	N. 62° W.	
Ratio of resultant to sum of winds,	.38	.34	.35	.28	.15½	.30½	.28	.28	
Mean velocity in miles per hour,	6.81	9.15	9.74	8.58	5.86	7.31	9.06	7.70	
Mean velocity in resultant direction,	2.60	3.13	3.42	2.41	0.91	2.24	3.19	2.18	

[3] Computed from the resultants for the seasons.

(Nos. 135 to 138.) **Northwestern Pennsylvania.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Erie,	Benjamin Grant & others,[1]	1	4	1840, 1841, 1843, 1849 and 1850.
Franklin,	Mr. Conelly and Rev. M. A. Tolman,	3	7	1839 to 1841 and 1867 to 1869 both inclusive.
Meadville,	T. H. Thickstun & others,[2]	4	7	1839 to 1841 and 1855 to 1858 both inclusive.
Moss Grove,	Frances Schreiner,	2	10	1854, 1855, 1856 and 1860.
Northeast,	John T. Milliken,	0	3	1867.
Oil City,	James A. Weeks,	0	4	1863 and 1864.
Randolph,	Orrin T. Hobbs,	1	2	1853, 1854 and 1855.
Rose Cottage,	C. C. Gaskell,	0	3	1839.
Saint Mary's,	Wm. A. Stokes,	0	5	1849.
Sugar Grove,	W. O. Blodget,	0	11	1853 and 1854.
Warren,	J. E. King and C. S. Brown,	0	8	1840 and 1841.
Youngsville,	A. C. Blodget,	0	4	1852.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
135. Meadville.[3]	The year	89	72	107	75	135	64	96	69	354	S. 27° 2′ E.	.05		
136. Franklin (1841).	The year	0	3	0	205	1	119	3	645	0	N. 60 4 W.	.47		
137. Surface wind at Smithsonian Stations, in the years 1854, 1855, 1856 and 1857.[4] No. of observations.	Spring	64	57	63	87	150	195	398	207	...	S. 79 12 W.	.331		
	Summer	12	11	31	48	78	121	253	119	...	S. 75 2 W.	.350		
	Autumn	19	20	47	101	274	184	211	114	...	S. 38 38 W.	.367		
	Winter	39	21	84	127	198	337	432	131	...	S. 56 32 W.	.410		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 61 40 W.	.351		
No. of miles.	Spring	387	281	327	711	1206	1563	3654	2465	...	S. 84 56 W.	.473		
	Summer	30	48	123	283	349	687	1335	1089	...	S. 84 52 W.	.498		
	Autumn	78	88	171	583	1380	1811	1264	616	...	S. 43 5 W.	.534		
	Winter	296	56	456	972	1651	3197	5333	1179	...	S. 64 40 W.	.577		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 68 59 W.	.503		
M'n vel. in miles per hour.	Spring	6.05	4.93	5.19	8.17	8.04	8.02	9.18	11.91					
	Summer	2.50	4.36	3.97	5.90	4.47	5.68	5.28	9.15					
	Autumn	4.11	4.40	3.64	5.77	5.04	9.84	5.99	5.40					
	Winter	7.59	2.67	5.43	7.65	8.34	9.49	12.34	9.00					
138. Aggregate number of observations at all stations. Surface wind.	Spring	249	235	271	435	519	522	753	874	608	S. 80 40 W.	.22⅓	N. 29° E.	.07
	Summer	165	205	134	217	411	421	574	614	745	S. 80 57 W.	.25½	N. 1 E.	.06½
	Autumn	183	130	144	400	652	638	441	827	632	S. 61 14 W.	.27	S. 21 E.	.04
	Winter	209	126	211	421	686	820	789	760	526	S. 60 55 W.	.33	S. 30 W.	.08
	The year[5]	...	...	...	...	...	...	...	...	...	S. 69 52 W.	.27		
Motion of clouds.	Spring	66	50	101	77	99	344	745	332	...	S. 86 39 W.	.57	N. 84 E.	.11
	Summer	29	22	16	45	50	256	720	275	...	S. 88 40 W.	.73	N. 67 W.	.06
	Autumn	58	28	20	45	69	334	585	317	...	S. 87 57 W.	.67	N. 3½ E.	.02
	Winter	38	13	25	40	78	362	801	231	...	S. 82 32 W.	.73½	S. 45 W.	.08
	The year[5]	...	...	...	...	...	...	...	...	...	S. 86 15 W.	.67½		
Two preceding combined.	Spring	315	285	372	512	618	866	1498	1206	608	S. 83 43 W.	.32½	N. 47 E.	.06
	Summer	194	227	150	262	461	677	1294	889	745	S. 85 45 W.	.39	N. 24½ W.	.05
	Autumn	241	158	164	445	721	972	1026	1144	632	S. 73 48 W.	.36½	S. 41½ E.	.03
	Winter	247	139	236	461	764	1182	1590	991	526	S. 70 23 W.	.43	S. 26 W.	.07½
	The year[5]	...	...	...	...	...	...	...	...	...	S. 78 3 W.	.37½		

[1] Messrs. Park and Reid.
[2] J. Limber, Daniel Dick and H. Shippen.
[3] Previous to the year 1842.
[4] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.31	4.36	5.07	8.29	6.26
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.42	1.53	1.86	3.40	2.20
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.46	2.17	2.71	4.78	3.15
Excess of the latter over the former	+1.04	+.64	+.85	+1.38	+.95

[5] Computed from the resultants for the seasons.

(Nos. 139 to 144.) **Western Pennsylvania and West Virginia,** north of lat. 40°.[1]

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alleghany Arsenal,	Post Surgeon,	26	7	1836 to 1863 inclusive.
Alleghany City,	....	0	1	1849.
Armstrong,	D. Peelor,	0	2	1842.
Beaver,	Wm. and James Allison and Rev. R. T. Taylor,	2	11	1840, 1841, 1867, 1868 and 1869.
Blairsville,	W. R. Boyers,	3	0	1861 to 1865 inclusive.
Butler,	Jacob Mechling,	1	8	1840, 1841 and 1844.
Cannonsburg,	— Campbell and others,[3]	13	4	1840, 1856 to 1859 and 1861 to 1869, all inclusive.
Elder's Ridge,	....	0	5	1852 and 1853.
Freeport,	A. D. Wier and John H. Baird,	1	6	1852, 1854 and 1860.
Indiana,	R. White and others,[4]	0	10	1840 and 1841.
Latrobe,	R. Muller and W. R. Boyers,	1	9	1860, 1861 and 1862.
Manchester,	Corydon Marks,	1	0	1850.
Murrysville,	Thos. H. Stewart,	2	1	1857, 1858, 1867, 1868.
Oakland Station,	W. W. Wilson,	4	9	1854 to 1858 inclusive.
Pittsburg,	— Bakewell and others,	1	8	1840, 1841, 1854 to 1859 and 1862.
Sewickleyville,	John J. Travelli and G. H. Tracy,	1	3	1860, 1861 and 1862.
Somerset,	George Mowry and others,[5]	5	11	1840, 1844, 1845, 1846, 1856, 1858, 1859 and 1861.
Hill,	Victor Scriba,	0	5	1856 and 1863.
Tarentum,	John H. Baird,	2	4	1857, 1858 and 1860.
Wellsburg,[2]	B. D. Sanders,	1	7	1858 to 1860 inclusive.
Wheeling,	Geo. P. Lockwood,	0	4	First four months of 1860.
Worthington,	Samuel Scott,	2	2	1860, 1861 and 1862.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
139. Alleghany Arsenal.	January	239	252	164	121	185	348	353	298					
	February	222	267	126	89	173	305	311	309					
	March	280	249	153	111	153	379	281	376					
	April	258	299	149	95	191	331	293	290					
	May	308	246	177	116	196	366	291	230					
	June	254	173	110	121	212	422	361	277					
	July	389	233	131	126	191	352	326	246					
	August	377	245	178	135	192	375	233	240					
	September	363	262	143	101	216	302	252	227					
	October	322	198	130	127	197	350	392	195					
	November	202	258	143	105	162	378	357	253					
	December	221	258	181	118	201	401	372	281					
	Spring	846	794	479	322	540	1076	865	896	...	N. 62° 40′ W.	.19	N. 42° E.	.02½
	Summer	1020	651	419	382	595	1149	920	763	...	N. 73 2 W.	.20	S. 14 W.	.01
	Autumn	887	718	416	333	575	1030	1001	675	...	N. 72 21 W.	.19½	S. 19 E.	.01
	Winter	682	777	471	328	559	1054	1036	888	...	N. 74 24 W.	.20½	S. 34½ W.	.01½
	The year[6]	...	...	...	...	...	...	...	...	...	N. 70 40 W.	.20		
140. Pittsburg.	The year	4	40	58	123	33	86	115	219	318				
141. Butler.	The year	3	116	645	83	17	792	833	152	...	S. 56 59 W.	.32		
142. Somerset.	Spring	32	40	54	134	78	145	250	139	297	S. 66 55 W.	.25½	East.	.10
	Summer	63	41	21	111	73	220	248	202	412	S. 80 12 W.	.30½	N. 36° E.	.06
	Autumn	41	12	39	96	84	267	343	177	397	S. 72 57 W.	.39	S. 70 W.	.04
	Winter	14	7	25	73	91	200	361	145	253	S. 72 45 W.	.47	S. 71½ W.	.12
	The year[6]	...	...	...	...	...	...	...	...	...	S. 73 21 W.	.35½		

[1] All the stations are in Pennsylvania except Wheeling and Wellsburg.
[2] Cross Creek.
[3] Rev. Wm. Smith, C. Davis and Jefferson College Lyceum.
[4] David Peeler and W. D. Hildebrand.
[5] Rev. D. J. Eyler and Dr. F. Chorpenning.
[6] Computed from the resultants for the seasons.

(No. 143 and 144.) **Western Pennsylvania, &c.—*Continued.***

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
143. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	33	27	64	27	23	152	234	114	...	S. 86° 59′ W.	.315		
		Summer	46	18	63	55	65	179	380	120	...	S. 79 40 W.	.351		
		Autumn	79	58	130	65	78	293	342	170	...	S. 78 35 W.	.278		
		Winter	32	26	72	22	28	162	189	69	...	S. 76 33 W.	.298		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 80 33 W.	.310		
	No. of miles.	Spring	207	205	329	258	182	1554	1652	1268	...	S. 85 55 W.	.463		
		Summer	189	76	194	331	421	1335	1931	842	...	S. 75 43 W.	.469		
		Autumn	335	298	478	334	546	2288	2345	1162	...	S. 75 1 W.	.405		
		Winter	146	84	274	137	328	1321	1298	352	...	S. 76 12 W.	.475		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 76 2 W.	.447		
	M'n vel. in miles p.h'r.	Spring	6.27	7.59	5.14	9.56	7.91	10.22	7.06	11.12					
		Summer	4.11	4.22	3.08	6.02	6.48	7.46	5.08	7.02					
		Autumn	4.24	5.14	3.68	5.14	7.00	7.81	6.86	6.84					
		Winter	4.56	3.23	3.81	6.23	11.71	8.15	6.87	5.10					
144 Aggregate number of observations at all stations.	Surface wind.	Spring	1999	2135	2687	1385	1566	3784	4625	3285	1537	N. 82 11 W.	.19½	N. 51° E.	.03
		Summer	2365	1700	2369	1330	1740	3759	5057	2491	2166	S. 89 53 W.	.21½	S. 8 W.	.01
		Autumn	2160	2008	2799	1373	1754	3916	5398	2873	2025	N. 88 39 W.	.20½	S. 66 E.	.01½
		Winter	1845	2180	2720	1361	1686	4387	5674	3542	1537	N. 88 40 W.	.24½	S. 83 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 32 W.	.21½		
	Motion of clouds.	Spring	120	103	292	171	167	637	1308	664	...	S. 87 30 W.	.50½	N. 64½ W.	.00½
		Summer	154	117	348	110	137	634	1332	541	...	S. 88 29 W.	.49	N. 24 E.	.01½
		Autumn	107	139	329	127	156	660	1321	474	...	S. 83 53 W.	.49	S. 29½ E.	.03
		Winter	86	126	373	61	102	632	1455	533	...	S. 88 42 W.	.53	N. 60½ W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 87 10 W.	.50		
	2 preceding combined.	Spring	2119	2238	2979	1556	1733	4421	5933	3949	1537	N. 84 29 W.	.24	N. 38 E.	.02
		Summer	2519	1817	2717	1440	1877	4393	6389	3032	2166	S. 89 32 W.	.25	S. 13½ E.	.01
		Autumn	2267	2147	3128	1500	1910	4576	6719	3347	2025	S. 89 32 W.	.24	S. 61½ E.	.01½
		Winter	1931	2306	3093	1422	1788	5019	7129	4075	1537	N. 89 16 W.	.27½	S. 83½ W.	.02½
		The year[2]	...	...	...	...	...	...	...	...	...	N. 88 41 W.	.25		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.37	4.77	5.95	5.54	5.66
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.01	1.67	1.66	1.65	1.75
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.95	2.24	2.41	2.63	2.53
Excess of the latter over the former	+.94	+.57	+.75	+.98	+.78

[2] Computed from the resultants for the seasons.

(Nos. 145 to 160.) **Western New York.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Angelica,	E. M. Alba,	3	3	1854 to 1857 inclusive.
Albion,	L. F. Munger,	1	0	1852.
Brown Cottage,	Miss Anna S. Landon,	1	1	1857 and 1858.
Buffalo,	E. G. & T. Burwell & others,[1]	9	0	1831, 1832, 1854, 1861, 1862 and 1866 to 1869 inclusive.
Buffalo Barracks,	Post Surgeon,	4	7	1841 to 1845 inclusive.
Canandaigua,	Henry Howe and others,[2]	10	0	1829 to 1838 inclusive.

[1] E. O. Salisbury, Dr. S. B. Hunt, W. D. Allen and W. Ives. [2] J. G. Howell and C. G. Metcalf.

(Nos. 145 to 160.) **Western New York.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Clyde,	Matthew Mackie,	1	8	1860, 1861 and 1862.
Cuba,	W. H. Talsott,	3	0	1839, 1840 and 1841.
Dansville,	Rev. John J. Brown,	1	0	1860 and 1862.
Eden,	Stephen & Anna S. Landon,	0	11	1858.
Falconer,	Laurens A. Langdon,	0	5	1853 and 1854.
Fort Niagara,	Post Surgeon,	14	8	1829, 1830, 1831, 1833, 1840, 1842 to 1846 and 1849 to 1854, both inclusive.
Fredonia,	J. A. Eastman and others,[1]	18	3	1830 to 1832, 1834 to 1848 and 1863 to 1864 all [inclusive.
Friendship,	Geo. W. Fries,	0	11	1866 and 1867.
Gaines,	Martin Mason and others,[2]	4	0	1839 to 1842 inclusive.
Geneva,	Rev. W. D. Wilson and Job Elleston,	5	6	1856 and 1864 to 1868 inclusive.
Great Valley,	Kathalo Kelsey,	0	11	1860.
Henrietta,	J. S. Whitaker and E. D. Ransom,	4	6	1835, 1836, 1839, 1861 and 1862.
Hermitage,	A. A. Hibbard,	3	10	1860 to 1864 inclusive.
Jamestown,	Rev. Sanford W. Roe,	2	4	1863 to 1866 inclusive.
Lenox,	....	0	4	1854.
Leroy,	L. F. Munger,	0	5	1854.
Lewiston,	High School,	18	0	1831 to 1849 inclusive, except 1838.
Lima,	Prof. S. A. Lattimore,	0	2	1861.
Little Genesee,	Daniel Edwards,	3	10	1866 to 1869 inclusive.
Lockport,	James B. Trevor,	0	3	1849.
Lyons,	Dr. E. W. Sylvester,	2	8	1860, 1861 and 1862.
Middlebury,	Academy,	18	0	1826 to 1835 and 1839 to 1845 both inclusive, [and 1848.
Millville,	Academy,	8	0	1840 to 1847 inclusive.
Palmyra,	J. F. Coggswell and S. Hyde,	2	6	1835, 1864 and 1865.
Penn Yan,	Dr. H. P. Sartwell,	5	3	1843, 1854 to 1857 inclusive and 1859.
Pine Hill,	G. Zimmerman,	0	2	1860.
Prattsburg,	Franklin Academy,	10	0	1829, 1830 and 1839 to 1846 inclusive.
Rochester,	Collegiate Institute and Prof. M. M. Matthews,	21	5	1856 to 1869 inclusive.[3]
Springville,	Academy,	7	0	1835, 1839, 1842, 1843, 1847, 1849 and 1850.
South Alabama,	....	0	2	1852.
Waverley,	....	0	2	1860.
Wellsville,	H. M. Sheerer,	1	0	1857 and 1860.
Wilson,	E. S. Holmes,	4	3	1860 to 1864 inclusive.
Youngstown,	See Fort Niagara,			

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
145. Fredonia.	January	62	91	47	79	194	192	346	105					
	February	59	57	45	77	184	152	359	85					
	March	67	75	47	58	196	162	456	55					
	April	100	73	37	61	149	165	383	112					
	May	121	55	45	52	169	229	395	50					
	June	90	50	31	30	152	208	440	79					
	July	107	30	28	29	102	206	526	88					
	August	126	70	39	47	121	171	423	119					
	September	86	64	53	82	147	215	321	118					
	October	86	88	54	104	186	172	322	84					
	November	88	80	35	69	222	191	315	80					
	December	82	80	51	66	193	236	332	76					
	Spring	288	203	129	171	514	556	1234	217	...	S. 72° 17′ W.	.44	N. 82° W.	.01
	Summer	323	150	98	106	375	585	1389	286	...	S. 82 20 W.	.52½	N. 60½ W.	.13
	Autumn	260	232	142	257	555	598	958	277	...	S. 63 39 W.	.37	S. 70½ E.	.08
	Winter	203	228	143	222	571	580	1037	266	...	S. 63 29 W.	.40	S. 51½ E.	.06
	The year	1074	813	512	756	2015	2319	4618	1046	...	S. 71 29 W.	.43		

[1] Henry Chaney, C. H. Palmer, F. A. Reddington, D. Stewart, J. Crane and Miss Isabella J. Caryl.
[2] J. W. Gilbert, W. Sherman and Arba Chubb. [3] Two separate observations in different parts of the city.

(Nos. 146 to 151.) **Western New York.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
146. Fort Niagara.	Spring	148	595	222	327	337	578	561	596	...	N. 88° 32′ W.	.15½			
	Summer	261	495	302	246	487	732	563	440	...	S. 65 38 W.	.17½			
	Autumn	278	379	297	304	500	553	697	548	...	S. 76 4 W.	.20			
	Winter	204	290	223	298	447	680	625	558	...	S. 68 44 W.	.28			
	The year	891	1759	1044	1175	1771	2543	2446	2142	...	S. 74 8 W.	.20			
147. Buffalo Barracks.	Spring	107	148	60	61	107	634	113	116	...	S. 55 1 W.	.39½			
	Summer	85	90	51	52	89	539	189	131	...	S. 76 21 W.	.43			
	Autumn	116	71	66	54	54	322	175	129	...	N. 61 13 W.	.39			
	Winter	81	147	55	83	90	438	188	137	...	S. 64 54 W.	.34			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 78 9 W.	.35½			
148. Lewiston.	January	91	127	64	59	153	404	116	102						
	February	68	107	55	61	154	358	117	98						
	March	93	98	64	53	179	329	181	120						
	April	118	81	80	61	178	299	132	131						
	May	102	135	55	53	167	371	133	100						
	June	70	39	56	40	169	470	154	82						
	July	72	53	35	52	178	473	142	111						
	August	93	104	53	51	147	413	154	101						
	September	82	105	35	51	147	408	140	112						
	October	97	95	59	60	146	387	166	106						
	November	63	75	60	79	171	374	161	97						
	December	77	96	68	73	191	360	160	91						
	Spring	313	314	199	167	524	999	446	351	...	S. 56 44 W.	.20½			
	Summer	235	196	144	143	494	1356	450	294	...	S. 51 44 W.	.47			
	Autumn	242	275	154	190	464	1169	467	315	...	S. 53 27 W.	.39			
	Winter	235	330	187	193	498	1122	393	291	...	S. 50 47 W.	.33			
	The year	1026	1115	684	693	1980	4646	1756	1251	...	S. 52 23 W.	.38			
149. Buffalo Academy.	The year	...	...	...	...	...	...	...	...	...	S. 59 57 W.	.52			
149(a). Buffalo Barracks.	The year	...	...	...	...	...	...	...	...	...	S. 47 1 W.	.32			
150. Spring-ville.	January	16	18	10	40	33	133	115	69	...	S. 69 14 W.	.53	....	...	248
	February	20	14	31	24	30	87	154	30	...	S. 71 15 W.	.45	....	...	224
	March	28	46	24	20	24	81	149	62	...	N. 87 11 W.	.43	....	...	248
	April	27	53	22	17	11	86	143	61	...	S. 87 17 W.	.42	....	...	240
	May	23	66	28	19	7	69	168	54	...	N. 77 01 W.	.41	....	...	248
	June	17	45	20	20	14	95	129	80	...	N 86 57 W.	.44	....	...	240
	July	14	39	13	28	11	91	172	66	...	S. 88 33 W.	.53	....	...	248
	August	33	87	20	19	27	84	87	77	...	N. 65 08 W.	.28	....	...	248
	September	31	35	20	18	40	90	77	109	...	N. 83 33 W.	.38	....	...	240
	October	33	31	13	33	39	100	114	71	...	S. 80 52 W.	.42	....	...	248
	November	30	23	4	26	52	124	85	76	...	S. 88 14 W.	.45	....	...	240
	December	33	35	12	22	26	132	105	69	...	S. 81 45 W.	.47	....	...	248
	Spring	78	165	74	56	42	236	460	177	...	N. 89 55 W.	.35	N. 58° E.	.07	736
	Summer	64	171	53	67	52	270	388	223	...	N. 84 12 W.	.41	North.	.08	736
	Autumn	94	89	37	77	131	314	276	256	...	S. 82 27 W.	.42	S. 20 W.	.02	728
	Winter	69	67	53	86	89	352	374	168	...	S. 74 16 W.	.48	S. 30 W.	.11	720
	The year	305	492	217	286	314	1172	1498	824	...	S. 87 04 W.	.42	....	...	2920
151. Millville.	January	18	61	26	50	35	156	62	88	...	S. 66 23 W.	.30	....	...	248
	February	13	55	23	45	43	147	46	80	...	S. 58 08 W.	.27	....	...	226
	March	22	70	36	37	28	153	55	95	...	S. 78 49 W.	.25	....	...	248
	April	28	89	33	31	34	137	39	89	...	N. 89 44 W.	.17	....	...	240
	May	23	67	23	44	26	141	60	112	...	S. 89 03 W.	.28	....	...	248
	June	30	49	26	28	34	160	51	102	...	S. 79 27 W.	.34	....	...	240
	July	44	58	21	21	35	154	47	116	...	N. 88 50 W.	.34	....	...	248
	August	33	91	17	48	38	150	38	81	...	S. 74 27 W.	.18	....	...	248
	September	32	55	27	62	45	121	36	102	...	S. 72 29 W.	.22	....	...	240
	October	30	37	23	56	52	143	51	104	...	S. 65 14 W.	.31	....	...	248
	November	19	39	28	70	35	119	83	87	...	S. 64 05 W.	.29	....	...	240
	December	24	41	31	65	40	132	56	107	...	S. 66 28 W.	.27	....	...	248
	Spring	73	226	92	112	88	431	154	296	...	S. 84 56 W.	.23	....	...	736
	Summer	107	198	64	97	107	464	136	299	...	S. 83 36 W.	.28	....	...	736
	Autumn	81	131	78	188	132	383	170	293	...	S. 72 54 W.	.19	....	...	728
	Winter	55	157	80	160	118	435	164	275	...	S. 63 47 W.	.28	....	...	722
	The year	316	712	314	557	445	1713	624	1163	..	S. 74 20 W.	.25	....	...	2922

The wind columns (North to Calm or variable) are headed: Relative Prevalence of Winds from the Different Points of the Compass.

[1] Computed from the resultants for the seasons.

(Nos. 152 to 154.) **Western New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
152. Gaines.[1]	January	9	12	15	26	14	63	52	57	...	S. 78° 30′ W.	.40	....	...	124
	February	7	10	10	18	17	70	35	59	...	N. 67 39 W.	.44	....	...	113
	March	17	36	24	22	7	42	37	63	...	N. 53 03 W.	.24	....	...	124
	April	19	35	20	22	3	40	29	72	...	N. 45 00 W.	.28	....	...	120
	May	7	18	29	15	2	43	34	100	...	N. 36 51 W.	.57	....	...	124
	June	1	16	29	12	12	59	17	94	...	N. 80 38 W.	.42	....	...	120
	July	9	27	7	10	8	59	18	110	...	N. 65 47 W.	.48	....	...	124
	August	1	73	9	14	16	53	7	75	...	N. 60 13 W.	.38	....	...	124
	September	15	26	5	22	11	40	25	96	...	N. 58 26 W.	.59	....	...	120
	October	21	31	6	12	7	71	31	69	...	N. 73 27 W.	.40	....	...	124
	November	6	15	10	52	9	29	29	90	...	N. 77 15 W.	.24	....	...	120
	December	19	15	7	37	13	55	36	66	...	N. 80 24 W.	.31	....	...	124
	Spring	43	89	73	59	12	125	100	235	...	N. 53 41 W.	.30	....	...	368
	Summer	11	116	45	36	36	171	42	279	...	N. 63 39 W.	.32	....	...	368
	Autumn	42	72	21	86	27	140	85	255	...	N. 69 32 W.	.34	....	...	364
	Winter	35	37	32	81	44	188	123	182	...	S. 80 38 W.	.38	....	...	361
	The year	131	314	171	262	119	624	350	951	...	N. 78 31 W.	.31	....	...	1461
153. Middlebury.	January	94	58	12	15	103	486	197	151	...	S. 59 40 W.	.62	....	...	558
	February	58	66	13	16	39	476	195	155	...	S. 73 11 W.	.55	....	...	509
	March	85	66	16	17	45	518	211	158	...	S. 73 23 W.	.59	....	...	558
	April	108	124	13	21	40	452	203	119	...	S. 76 23 W.	.47	....	...	540
	May	113	77	12	30	56	482	186	160	...	S. 76 05 W.	.53	....	...	558
	June	78	50	9	17	61	570	205	90	...	S. 61 31 W.	.65	....	...	540
	July	61	33	9	16	43	637	204	113	...	S. 63 47 W.	.71	....	...	558
	August	84	57	3	19	70	569	182	132	...	S. 71 49 W.	.60	....	...	558
	September	74	45	11	13	43	561	179	154	...	S. 69 09 W.	.62	....	...	540
	October	73	35	11	23	54	609	170	141	...	S. 64 53 W.	.66	....	...	558
	November	78	50	21	28	34	561	194	114	...	S. 66 44 W.	.60	....	...	540
	December	90	64	27	18	57	509	219	132	...	S. 70 55 W.	.57	....	...	558
	Spring	306	267	41	68	141	1452	600	437	...	S. 76 07 W.	.52	....	...	1656
	Summer	223	140	21	52	174	1776	591	335	...	S. 84 03 W.	.59	....	...	1656
	Autumn	225	130	43	64	131	1731	543	409	...	S. 87 09 W.	.58	....	...	1638
	Winter	242	188	52	49	199	1471	611	438	...	S. 71 18 W.	.56	....	...	1625
	The year	996	725	157	233	645	6430	2345	1619	...	S. 69 21 W.	.58	....	...	6575
154. Henrietta.	January	15	12	12	13	47	44	26	17	...	S. 37 17 W.	.36	....	...	93
	February	9	9	10	11	36	52	33	10	...	S. 43 42 W.	.43	....	...	85
	March	15	14	14	7	29	53	43	11	...	S. 57 01 W.	.49	....	...	93
	April	43	6	14	7	38	16	35	21	...	N. 77 50 W.	.30	....	...	90
	May	45	16	1	8	23	43	21	29	...	N. 72 47 W.	.31	....	...	93
	June	16	4	34	4	16	40	38	28	...	S. 61 16 W.	.29	....	...	90
	July	24	4	6	9	53	44	41	5	...	S. 74 39 W.	.54	....	...	93
	August	26	12	3	10	44	32	23	36	...	S. 75 25 W.	.30	....	...	93
	September	14	5	7	10	45	42	20	37	...	S. 56 49 W.	.39	....	...	90
	October	13	11	4	10	56	53	17	22	...	S. 38 32 W.	.45	....	...	93
	November	4	7	7	6	55	58	25	18	...	S. 38 28 W.	.55	....	...	90
	December	13	6	16	6	61	32	42	10	...	S. 36 37 W.	.44	....	...	93
	Spring	103	36	29	22	90	112	99	61	...	S. 85 02 W.	.28	....	...	276
	Summer	66	20	43	23	113	116	102	69	...	S. 62 41 W.	.32	....	...	276
	Autumn	31	23	18	26	156	153	62	77	...	S. 43 34 W.	.46	....	...	273
	Winter	37	27	38	30	144	128	101	37	...	S. 38 46 W.	.41	....	...	271
	The year	237	106	128	101	503	509	364	244	...	S. 54 07 W.	.35	....	...	1096

[1] Computed from observations made at Gaines Academy from 1839 to 1842 inclusive.

(Nos. 155 to 158.) **Western New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
155. Rochester.[1]	January	65	86	37	114	102	241	282	251	...	S. 83° 47′ W.	.40	....	...	589
	February	49	87	40	111	83	217	252	233	...	S. 84 13 W.	.35	....	...	536
	March	93	108	65	98	68	199	280	267	...	N. 78 41 W.	.36	....	...	589
	April	109	147	55	81	68	179	224	277	...	N. 77 05 W.	.47	....	...	570
	May	114	137	50	78	76	159	240	324	..	N. 62 36 W.	.37	....	...	589
	June	103	134	27	73	67	188	253	295	...	N. 71 25 W.	.40	....	...	570
	July	88	136	16	40	54	234	274	336	...	N. 72 07 W.	.50	....	...	589
	August	93	147	19	67	60	241	211	340	...	N. 62 00 W.	.30	....	...	589
	September	89	114	37	59	92	264	208	277	...	N. 82 44 W.	.28	....	...	570
	October	92	94	28	66	110	282	254	252	...	N. 87 47 W.	.43	....	...	589
	November	58	75	69	79	97	220	300	242	...	S. 86 43 W.	.39	....	...	570
	December	49	104	70	86	88	222	315	244	...	S. 88 37 W.	.39	....	...	589
	Spring	316	392	170	257	212	537	744	868	...	N. 68 38 W.	.34	N. 52° E.	.09	1748
	Summer	284	417	62	180	181	663	738	971	...	N. 70 51 W.	.43	N. 22½ W.	.09	1748
	Autumn	239	283	134	204	299	766	762	771	...	S. 89 58 W.	.39	S. 18 W.	.06	1729
	Winter	163	277	147	311	273	680	849	728	...	S. 85 32 W.	.38	S. 2 W.	.09	1714
	The year	1002	1369	513	952	965	2646	3093	3338	...	N. 80 58 W.	.38	....	...	6939
156. Pratts-burg.	January	35	14	2	11	96	133	129	200	...	N. 89 13 W.	.58	....	...	310
	February	19	10	5	9	111	82	86	242	...	N. 85 57 W.	.49	....	...	282
	March	38	11	6	12	124	73	99	257	...	N. 82 21 W.	.52	....	...	310
	April	40	44	10	38	146	48	83	191	...	S. 89 49 W.	.31	....	...	300
	May	64	13	13	16	137	52	111	214	...	N. 81 34 W.	.46	....	...	310
	June	33	12	15	21	144	43	100	232	...	N. 86 22 W.	.43	....	...	300
	July	27	14	19	11	86	72	129	262	...	N. 76 43 W.	.56	....	...	310
	August	19	26	15	30	70	94	111	255	...	N. 78 44 W.	.51	....	...	310
	September	20	6	5	17	171	78	111	192	...	S. 74 27 W.	.48	....	...	300
	October	45	6	7	22	187	69	94	190	...	S. 79 12 W.	.42	....	...	310
	November	21	17	20	24	126	63	113	216	...	S. 89 41 W.	.43	....	...	300
	December	46	19	7	16	122	98	114	198	...	S. 89 20 W.	.48	....	...	310
	Spring	142	68	29	66	407	173	293	662	...	N. 83 50 W.	.42	....	...	920
	Summer	79	52	49	62	300	209	340	749	...	N. 80 10 W.	.49	....	...	920
	Autumn	86	29	32	63	484	210	318	598	...	S. 79 22 W.	.44	....	...	910
	Winter	100	43	14	36	329	313	329	640	...	N. 89 33 W.	.51	....	...	902
	The-year	407	192	124	227	1520	905	1280	2649	...	N. 88 23 W.	.47	....	...	3652
157. Canan-daigua.	January	27	31	14	23	159	83	192	91	...	S. 65 22 W.	.48	....	...	310
	February	22	7	13	33	152	43	209	85	...	S. 68 07 W.	.49	....	...	282
	March	14	14	11	14	194	68	202	103	...	S. 61 44 W.	.55	....	...	310
	April	24	3	7	14	164	102	221	65	...	S. 61 28 W.	.60	....	...	300
	May	23	21	14	39	199	71	172	81	...	S. 44 39 W.	.39	....	...	310
	June	29	7	18	54	172	73	202	45	...	S. 49 29 W.	.39	....	...	300
	Juiy	8	13	21	17	177	85	252	47	...	S. 56 00 W.	.63	....	...	310
	August	34	7	12	9	152	94	245	67	...	S. 69 29 W.	.59	....	...	310
	September	19	4	5	30	145	84	231	82	...	S. 65 28 W.	.58	....	...	300
	October	12	0	7	9	130	112	251	99	...	S. 70 57 W.	.74	....	...	310
	November	20	4	4	16	137	104	239	76	...	S. 67 04 W.	.63	....	...	300
	December	38	10	16	39	118	86	198	115	...	S. 74 22 W.	.50	....	...	310
	Spring	61	38	32	67	557	241	595	249	...	S. 58 33 W.	.53	....	...	920
	Summer	71	27	51	80	501	252	699	159	...	S. 58 17 W.	.55	....	...	920
	Autumn	51	8	16	55	412	300	721	257	...	S. 68 04 W.	.62	....	...	910
	Winter	87	48	43	95	429	212	599	291	...	S. 68 30 W.	.48	....	...	902
	The year	270	121	142	297	1899	1005	2614	956	...	S. 63 21 W.	.54	....	...	3652
158. Cuba.	The year	4135	1645	1082	704	3641	3615	7314	2716	...	N. 86 41 W.	.32	....	...	1096

[1] Prof. C. Dewey appends the following note to the observations at this place: "The country around this station is a rolling level, with no local obstructions which might influence the direction of the winds. Lake Ontario is five miles to the north, and there are slight hills to the south which have no influence upon the winds. The surface winds are observed to differ from the upper currents. From 1836 till about 1844 the indications of the wind vane were recorded, but subsequently the direction as shown by clouds. This difference has been ascribed to the fact that the waters of Lake Ontario acquire and retain till late the summer's heat, and thus give a tendency of the surface current of air towards them."

(Nos. 159 and 160.) **Western New York.**—*Continued.*

Kind of observations.		Time of the year.	RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variabl	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
159. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observat'ns.	Spring	134	218	232	168	294	639	665	367	...	S. 71° 27′ W.	.192		
		Summer	144	113	117	179	230	619	583	373	...	S. 72 18 W.	.415		
		Autumn	129	123	205	164	251	470	533	189	...	S. 59 23 W.	.320		
		Winter	67	114	148	163	195	528	534	234	...	S. 63 3 W.	.406		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 66 16 W.	.332		
	No. of miles.	Spring	1062	1834	1402	829	2253	4885	4577	2876	...	S. 61 38 W.	.186		
		Summer	707	529	374	917	1598	3797	3313	1941	...	S. 67 28 W.	.473		
		Autumn	814	672	923	857	1471	3329	3003	1219	...	S. 61 36 W.	.374		
		Winter	375	642	1007	1002	1261	5826	4458	1836	...	S. 62 47 W.	.520		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 63 34 W.	.389		
	M'n vel. in miles p.h'r.	Spring	7.93	8.41	6.14	4.93	7.66	7.64	6.88	7.84					
		Summer	4.91	4.68	3.20	5.12	6.95	6.13	5.68	5.20					
		Autumn	6.31	5.46	4.50	5.23	5.86	7.08	5.63	6.45					
		Winter	5.60	5.63	6.80	6.15	6.47	11.03	8.35	7.85					
160. Aggregate number of observations at all stations.	Surface winds.	Spring	2774	4354	2028	2891	4762	8904	8740	6621	1261	S. 78 27 W.	.30	N. 48° E.	.06
		Summer	2706	3311	1394	1904	4650	10168	8658	6123	1467	S. 75 51 W.	.39½	N. 67½ W.	.04
		Autumn	2453	2570	1643	2488	5463	9161	8201	5753	1334	S. 68 24 W.	.37	S. 2½ E.	.02½
		Winter	2174	2749	1725	2898	5490	9974	9368	5903	958	S. 67 3 W.	.39	S. 20½ W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 72 5 W.	.36		
	Motion of clouds.	Spring	148	306	274	382	259	913	2741	785	...	S. 85 25 W.	.55	N. 65 E.	.03½
		Summer	193	284	263	342	288	883	2835	672	...	S. 84 57 W.	.56	N. 63 E.	.00¾
		Autumn	170	257	220	321	265	943	2653	724	...	S. 84 45 W.	.58	N. 66½ W.	.00½
		Winter	123	172	260	265	234	895	2546	613	...	S. 82 57 W.	.60	S. 56 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 84 28 W.	.57½		
	2 preceding combined.	Spring	2922	4660	2302	3273	5021	9817	11481	7406	1261	S. 79 50 W.	.33	N. 43 W.	.06
		Summer	2899	3595	1657	2246	4938	11051	11493	6795	1467	S. 77 24 W.	.41	N. 66 W.	.03½
		Autumn	2623	2827	1863	2809	5728	10104	10854	6477	1334	S. 71. 23 W.	.40	S. 26 W.	.03
		Winter	2297	2921	1985	3163	5724	10869	11914	6516	958	S. 69 34 W.	.41	S. 21 W.	.04½
		The year[2]	...	...	...	...	...	...	...	...	...	S. 74 21 W.	.38½		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.26	5.62	5.95	8.27	6.77
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.39	2.33	1.90	3.36	2.25
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.35	2.66	2.23	4.30	2.63
Excess of the latter over the former	—.04	+.33	+.33	+.94	+.38

[2] Computed from the resultants for the seasons.

(Nos. 161 and 162.) **Northern Pennsylvania.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Ceres,	R. P. Stevens,	1	3	1851 and 1854.
Coudersport,	S. Ross,	0	5	1845.
Lamar,	— Matthias,	0	1	1843.
Smithport,	M. R. Atkins and R. Chadwick,	1	6	1839, 1840 and 1841.
Tioga,	E. T. Bentley,	5	10	1864 to 1869 inclusive.
Wellsboro',	Henry W. Thorp,	0	6	1849.
Williamsport,	H. C. Moyer,	0	8	1868 and 1869.

(Nos. 161 and 162.) **Northern Pennsylvania.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
161. Smithport.	The year	32	36	134	113	56	155	359	142	2	S. 75° 6′ W.	.33	....	...	365
162. Aggregate number of observations at all stations. Surface winds.	Spring	298	68	168	141	381	323	780	319	553	S. 81 29 W.	.30½			
	Summer	168	48	156	76	297	305	718	212	862	S. 75 35 W.	.30½			
	Autumn	187	24	68	66	280	256	514	196	393	S. 76 46 W.	.36½			
	Winter	157	34	112	106	359	370	765	308	347	S. 73 59 W.	.42			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 76 44 W.	.35			
Motion of clouds.	Spring	111	27	33	14	248	152	373	145	...	S. 75 42 W.	.49			
	Summer	68	6	19	3	135	160	296	65	...	S. 72 55 W.	.60			
	Autumn	98	10	4	5	192	151	269	117	...	S. 75 32 W.	.54			
	Winter	80	16	25	22	260	191	364	112	...	S. 65 29 W.	.54			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 72 22 W.	.54			
2 preceding combined.	Spring	409	95	201	155	629	475	1153	464	553	S. 79 13 W.	.35	N. 45½°E.	.05½	
	Summer	236	54	175	79	432	465	1014	277	862	S. 75 2 W.	.36½	N. 81 E.	.03	
	Autumn	285	34	72	71	472	407	783	313	393	S. 76 17 W.	.42	N. 82 W.	.02½	
	Winter	237	50	137	128	619	561	1129	420	347	S. 71 1 W.	.45½	S. 43½ W.	.06½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 75 10 W.	.39½			

[1] Computed from the resultants for the seasons.

(Nos. 163 to 167.) **Central Pennsylvania.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alleghany Tunnel,	....	0	11	1852 and 1853.
Altoona,	W. R. Boyers and T. H. Savery,	0	5	1860 and 1863.
Avondell,	Wm. E. Baker,	1	11	1867, 1868 and 1869.
Bedford,	Sam'l Brown & Rev. H. Heckerman,	8	1	1840, 1841, 1854 to 1858 inclusive, 1860 and 1861.
Bellefonte,	J. I. Burrell,	1	0	
Carlisle,	W. H. Allen,	0	11	1839 and 1841.
Carlisle Barracks,	Post Surgeon,	19	5	1840 to 1863 inclusive, except 1847.
Ebensburg,	Richard Lewis,	1	5	1840 and 1841.
Fleming,	Samuel Brugger,	8	6	1857 to 1865 inclusive, and 1867.
Grampian Hills,	Elisha Fenton,	5	6	1864 to 1869 inclusive.
Green Hill,	Mr. Wright,	0	1	1843.
Hollidaysburg,	J. R. Lowrie,	0	9	1853.
Huntingdon,	Mr. Miller,	1	0	1840.
Johnstown,	David Peelor,	1	11	1868 and 1869.
Lewistown,	J. Culbertson,	0	5	1839.
Linden,	James Barret,	0	6	1858 and 1859.
Mifflintown,	J. A. Kinkead,	1	4	1840 and 1841.
Mount Joy,	Dr. Jacob R. & Mary E. Hoffer,	2	5	1857, 1858 and 1859.
Shirleysburg,	....	0	10	1853.
Warrior's Mark,	J. R. Lowrie,	0	5	1854.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
163. Ebensburg.	The year	38	21	43	102	51	163	304	176	116	S. 81° 21′ W.[1]	.47	....	...	365
164. Bedford.	The year	10	22	18	169	42	282	55	485	...	S. 86 57 W.[1]				
165. Carlisle Barracks.	Spring	210	291	875	644	415	333	1913	774	...	S. 82 59 W.	.21½			
	Summer	188	219	696	616	692	635	2165	501	...	S. 62 35 W.	.33			
	Autumn	259	192	773	542	507	467	2094	778	...	S. 80 42 W.	.30			
	Winter	254	354	870	490	265	306	1812	1079	...	N. 71 39 W.	.26			
	The year	911	1056	3214	2292	1879	1741	7984	3132	...	S. 81 39 W.	.26½			

[1] Computed from observations recorded for 16 points of the compass.

(No. 166 and 167.) **Central Pennsylvania.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
166. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observat'ns.	Spring	26	89	79	202	55	353	215	756	...	N. 76° 9′ W.	.382		
		Summer	11	57	78	234	31	413	193	522	...	S. 83 6 W.	.336		
		Autumn	13	34	29	159	21	348	120	454	...	S. 87 39 W.	.400		
		Winter	25	62	34	164	33	336	144	733	...	N. 74 8 W.	.451		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 84 8 W.	.387		
	No. of miles.	Spring	129	577	369	736	284	1106	1517	4548	...	N. 62 49 W.	.471		
		Summer	26	162	190	664	82	984	706	1505	...	S. 88 34 W.	.352		
		Autumn	105	217	168	417	70	974	458	2032	...	N. 71 56 W.	.422		
		Winter	182	235	104	382	91	770	676	4666	...	N. 55 26 W.	.640		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 65 20 W.	.477		
	M'n vel. in miles p.h'r.	Spring	4.96	6.48	4.67	3.64	5.16	3.13	7.06	6.02					
		Summer	2.36	2.84	2.44	2.84	2.65	2.38	3.66	2.88					
		Autumn	8.08	6.38	5.79	2.62	3.33	2.80	3.82	4.48					
		Winter	7.28	3.79	3.06	2.33	2.76	2.29	4.69	6.37					
167. Aggregate number of observations at all stations.	Surface winds.	Spring	372	702	1599	1547	696	1635	3505	3109	1347	N. 88 7 W.	.25½		
		Summer	273	454	1209	1415	979	2141	3662	2145	1873	S. 71 39 W.	.31		
		Autumn	390	451	1261	1250	757	1733	3527	2571	1689	S. 85 16 W.	.30		
		Winter	365	682	1594	1121	455	1651	3607	3314	1251	N. 79 39 W.	.31		
		The year	1400	2289	5663	5333	2887	7160	14301	11139	6160	S. 87 5 W.	.29		
	Motion of clouds.	Spring	96	136	208	459	129	723	1149	1266	...	N. 86 19 W.	.46		
		Summer	85	167	129	354	92	863	1182	1036	...	S. 89 31 W.	.52		
		Autumn	88	87	138	285	103	731	902	1072	...	N. 87 13 W.	.52		
		Winter	52	52	199	255	90	656	1318	1229	...	N. 84 18 W.	.58		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 0 W.	.52		
	2 preceding combined.	Spring	468	838	1807	2006	825	2358	4654	4375	1347	N. 87 31 W.	.30	N. 64½° E.	.04½
		Summer	358	621	1338	1769	1071	3004	4844	3181	1873	S. 77 15 W.	.35	S. 2 W.	.07½
		Autumn	478	538	1399	1535	860	2464	4429	3643	1689	S. 87 32 W.	.34½	S. 9½ W.	.02
		Winter	417	734	1793	1376	545	2307	4925	4543	1251	N. 81 14 W.	.37	N. 26½ W.	.06
		The year[2]	...	...	...	...	...	...	...	...	6160	S. 88 59 W.	.34		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.22	2.81	3.77	4.64	4.11
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.99	.94	1.51	2.09	1.59
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.46	.99	1.59	2.97	1.96
Excess of the latter over the former	+.47	+.05	+.08	+.88	+.37

[2] Computed from the resultants for the seasons.

(Nos. 168 to 187.) **Central New York.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Auburn,	Academy,	28	0	1827 to 1830, 1832 to 1849 and 1860 to 1865, all inclusive.
Baldwinsville,	John Bowman,	13	2	1854 to 1867.
Bridgewater,	Academy,	4	0	1843, 1844, 1845 and 1847.
Cazenovia,	Oneida Conference Seminary,	27	3	1830 to 1835, 1837 to 1846, 1848, 1849, 1856 to 1859, 1861 to 1863, 1865 and 1867 to 1869, all inclusive.

(Nos. 168 to 187.) **Central New York.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Clockville,	J. P. Chapman,	0	5	1850.
Clinton,	Prof. O. Root and H. M. Paine,	4	8	1856, 1857 and 1862 to 1865 inclusive.
Constableville,	L. L. Fairchild,	0	4	1851.
Constantia,	Sereno Clark,	0	1	1861.
Cooperstown,	G. Pomeroy Keese,	0	3	1869.
Covert,	John Lefferts,	0	11	1858.
Ellisburg,	Union Literary Society,	9	0	1830, 1831, 1833 to 1836 and 1842 to 1844, all inclusive.
Hamilton,	Academy,	17	0	1828 to 1831, 1833 to 1836, 1839 and 1842 to 1844, all inclusive.
Hamilton College,	Prof. Eaton,	0	1	1843.
Hartwick,	Seminary,	16	0	1826 to 1832, 1835, 1837, 1839 and 1845 to 1850, all inclusive.
Havana,	Col. E. C. Frost,	0	1	1860.
Hector,	David Trowbridge,	2	2	1865, 1866 and 1867.
Homer,	Cortland Academy,	18	2	1832, 1835 to 1850 inclusive, and 1856.
Houseville,	Walter D. Yale,	0	6	1856 and 1857.
Ilion,	J. D. Ingersoll,	0	1	1860.
Ithaca,	Academy,	16	0	1828, 1830, 1833, 1835 to 1840 and 1842 to 1848, all inclusive.
Ledyard,	Cayuga Academy,	13	0	1830, 1831, 1832, 1834, 1838, 1840 to 1846 inclusive, and 1850.
Leonardsville,	Mr. Hope,	0	1	1843?
Lisle,	....	0	1	1849.
Lodi,	John Lefferts,	2	9	1854, 1855 and 1856.
Ludlowville,	C. P. Murphy,	0	8	1869.
Marathon,	Lewis Swift,	0	4	1863.
McGrawville,	J. Metcalf Smith,	0	11	1856 and 1857.
Mexico,	Academy & John R. French,	11	11	1837, 1838, 1840 to 1846 inclusive, 1848, 1849 and 1856.
Milo,	Gilbert D. Baker,	0	8	1869.
Newark Valley,	Rev. Samuel Johnson,	1	10	1868 and 1869.
Nichols,	Robert Howell,	13	0	1857 to 1869 inclusive.
Oneida,	Dr. S. Spooner,	1	0	1869.
Onondago,	Academy,	16	0	1826 to 1829, 1832, 1833 and 1835 to 1844, all inclusive.
Oswego,	C. Strong and others,[1]	19	6	1843 to 1846, 1850, 1851, 1853 to 1857, 1859 and 1861 to 1869, all inclusive.
Ovid,	J. W. Chickering,	2	1	1855, 1856 and 1857.
Oxford,	Academy,	17	0	1829 to 1845 inclusive.
Palermo,	E. B. Bartlett,	9	11	1860 to 1869 inclusive.
Perry City,	David Trowbridge,	0	3	1864 and 1869.
Plainville,	J. H. Norton,	0	9	1856 and 1857.
Pompey,	Academy and S. M. Ingalls,	17	3	1826 to 1833, and 1835 to 1843, both inclusive, and 1856.
Pompey Hill,	John F. Kendall,	0	3	1856.
Seneca Falls,	John P. Fairchild & others,[2]	2	11	1849(?), 1850(?), 1861 and 1862.
Sennett,	Henry B. Fellows,	0	1	1857.
Skaneateles,	W. M. Beauchamp,	6	2	1861 to 1867 inclusive.
South Edmeston,	L. A. Beardsley,	1	4	1850 and 1851.
South Trenton,	Capt. Storrs Barrows,	1	5	1864 and 1865.
Syracuse,	Lyman W. Conkey,	1	0	1843.
Townsendville,	John Lefferts,	1	1	1856 and 1857.
Union Spring,	....	0	1	1861.
Utica,	Academy & Joseph Graham,	23	0	1826 to 1845 inclusive, 1848, 1856 and 1857.
Wampsville,	Dr. Stillman Spooner,	15	10	1854 to 1869 inclusive.
Waterburgh,	David Trowbridge,	1	2	1868 and 1869.
Waterville,	James M. Tower,	1	0	1849 and 1850.
Whitesboro',	Oneida Institute,	7	0	1834 to 1840 inclusive.

[1] J. H. Hart and Capt. W. S. Malcolm. [2] Charles A. Avery and Philo Cowing.

(Nos. 168 to 173.) **Central New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
168 & 169. Ledyard.	January	103	27	13	57	224	86	124	172	...	S. 66° 29′ W.	.32	....	...	434
	February	113	29	14	40	198	61	123	156	...	S. 83 13 W.	.27	....	...	395
	March	127	16	10	49	247	55	126	176	...	S. 76 2 W.	.31	....	...	434
	April	164	28	16	36	235	66	86	149	...	S. 82 43 W.	.19	....	...	420
	May	219	11	5	20	204	95	93	159	...	N .82 40 W.	.31	....	...	434
	June	219	21	12	43	254	71	60	100	...	S. 76 37 W.	.17	....	...	420
	July	237	11	13	28	238	76	84	119	...	N. 84 28 W.	.23	....	...	434
	August	154	13	32	51	294	71	67	124	...	S. 44 54 W.	.23	....	...	434
	September	132	12	23	37	273	79	96	128	...	S. 52 4 W.	.26	....	...	420
	October	126	9	7	52	270	90	104	148	...	S. 59 7 W.	.33	....	...	434
	November	108	8	14	37	280	81	94	158	...	S. 57 39 W.	.33	....	...	420
	December	124	22	4	46	241	62	151	155	...	S. 74 49 W.	.33	....	...	434
	Spring	510	55	31	105	686	216	305	484	...	S. 71 19 W.	.29	....	...	1288
	Summer	610	45	57	122	786	218	211	343	...	S. 71 25 W.	.19	....	...	1288
	Autumn	366	29	44	126	823	250	294	434	...	S. 57 39 W.	.31	....	...	1274
	Winter	340	78	31	143	663	209	398	483	...	S. 68 37 W.	.34	....	...	1263
	The year	1826	207	163	496	2958	893	1208	1744	...	S. 73 5 W.	.27	....	...	5113
170. Ithaca.	January	78	22	17	78	238	89	100	370	...	S. 89 40 W.	.35	....	...	527
	February	115	23	14	80	172	62	86	354	...	N. 87 53 W.	.31	....	...	481
	March	126	21	22	118	191	85	64	365	...	N. 76 7 W.	.28	....	...	527
	April	94	48	22	99	161	98	65	373	...	N. 71 25 W.	.29	....	...	510
	May	129	46	18	78	181	157	123	260	...	S. 89 58 W.	.32	....	...	527
	June	93	44	23	83	195	148	128	246	...	S. 58 43 W.	.28	....	...	510
	July	111	42	23	44	189	217	124	242	...	S. 80 21 W.	.38	....	...	527
	August	100	41	26	78	185	154	124	284	...	S. 87 45 W.	.34	....	...	527
	September	81	30	25	73	191	126	112	322	...	S. 89 30 W.	.34	....	...	510
	October	81	17	6	80	191	129	136	352	...	N. 85 26 W.	.42	....	...	527
	November	47	19	9	75	185	136	148	341	...	S. 89 12 W.	.40	....	...	510
	December	61	10	16	81	159	116	168	381	...	N. 87 58 W.	.44	....	...	527
	Spring	349	115	62	295	533	340	252	998	...	N. 79 41 W.	.29	....	...	1564
	Summer	304	127	72	205	569	519	376	772	...	S. 81 49 W.	.34	....	...	1564
	Autumn	209	66	40	228	567	391	396	1015	...	S. 88 18 W.	.40	....	...	1547
	Winter	254	55	47	239	569	267	354	1105	...	N. 82 9 W.	.38	....	...	1535
	The year	1116	363	221	967	2238	1517	1378	3890	...	N. 88 13 W.	.35	....	...	6210
171. Auburn.	January	198	46	14	129	300	175	137	365	...	N. 71 6 W.	.28	....	...	682
	February	146	36	14	100	266	189	142	351	...	S. 82 88 W.	.34	....	...	622
	March	117	54	18	95	358	192	113	417	...	S. 75 9 W.	.32	....	...	482
	April	137	40	30	105	261	167	88	492	...	N. 81 49 W.	.32	....	...	660
	May	157	58	20	101	314	254	88	372	...	S. 75 9 W.	.30	....	...	682
	June	95	31	21	101	398	328	78	268	...	S. 44 16 W.	.42	....	...	660
	July	103	32	13	103	399	315	111	288	...	S. 43 25 W.	.47	....	...	682
	August	151	36	11	116	383	304	75	288	...	S. 54 20 W.	.35	....	...	682
	September	101	41	12	99	301	326	88	354	...	S. 63 20 W.	.37	....	...	660
	October	128	32	14	115	325	283	86	381	...	S. 71 57 W.	.34	....	...	682
	November	136	59	23	73	212	305	120	392	...	S. 81 17 W.	.42	....	...	660
	December	216	68	13	58	172	281	119	437	...	N. 81 17 W.	.41	....	...	682
	Spring	411	152	68	301	933	613	289	1281	...	S. 82 42 W.	.31	....	...	2024
	Summer	349	99	45	320	1180	947	264	844	...	S. 48 51 W.	.39	....	...	2024
	Autumn	365	132	49	287	838	914	294	1127	...	S. 72 46 W.	.36	....	...	2002
	Winter	560	150	41	287	738	645	398	1153	...	N. 86 20 W.	.34	....	...	1986
	The year	1685	533	203	1195	3689	3119	1245	4405	...	S. 73 54 W.	.33	....	...	8036
172. Oswego (Fort Ontario).	Spring	69	573	76	600	187	744	297	750	...	S. 73 29 W.	.14			
	Summer	56	414	79	456	206	955	311	593	...	S. 58 31 W.	.27			
	Autumn	169	413	96	692	294	663	230	537	...	S. 26 4 W.	.14½			
	Winter	190	590	119	696	482	705	215	580	...	S. 11 49 W.	.13			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 46 12 W.	.16			
173. Syracuse.	The year	8	18	55	104	72	78	249	146	...	S. 73 55 W.	.40		...	365

[1] Computed from the resultants for the seasons.

(Nos. 174 to 177.) **Central New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
174. Mexico.	January	71	10	61	139	83	62	138	118	...	S. 76° 10′ W.	.20	....	...	341
	February	69	22	38	118	92	43	133	107	...	S. 66 41 W.	.17	....	...	311
	March	60	15	48	121	76	42	191	129	...	S. 79 15 W.	.26	....	...	341
	April	31	12	29	121	65	48	219	135	...	S. 83 13 W.	.42	....	...	330
	May	25	22	38	101	75	48	234	139	...	S. 80 18 W.	.37	....	...	341
	June	33	11	19	77	87	67	245	121	...	S. 78 6 W.	.46	....	...	330
	July	48	9	13	74	87	80	260	111	...	S. 81 18 W.	.49	....	...	341
	August	35	22	26	93	126	91	221	68	...	S. 61 5 W.	.49	....	...	341
	September	24	26	25	83	108	83	222	88	...	S. 73 0 W.	.50	....	...	330
	October	51	15	32	109	80	76	243	76	...	S. 73 52 W.	.52	....	...	341
	November	47	24	50	94	72	71	225	77	...	S. 70 47 W.	.31	....	...	330
	December	54	20	25	158	62	43	225	95	...	S. 68 34 W.	.28	....	...	341
	Spring	116	49	115	343	216	138	644	403	...	S. 79 15 W.	.32	....	...	1012
	Summer	116	42	58	244	300	238	726	300	...	S. 71 29 W.	.45	....	...	1012
	Autumn	122	65	107	286	260	230	691	241	...	S. 66 49 W.	.36	....	...	1001
	Winter	194	52	124	415	237	148	496	320	...	S. 64 27 W.	.20	....	...	993
	The year	548	208	404	1288	1013	754	2557	1264	...	S. 71 0 W.	.33	....	...	4018
175. Homer.	January	8	6	5	113	217	288	67	412	...	S. 60 25 W.	.53	....	...	558
	February	6	5	7	91	167	263	44	435	...	S. 67 21 W.	.47	....	...	509
	March	2	4	6	92	195	278	57	482	...	S. 77 27 W.	.43	....	...	558
	April	6	4	5	94	146	284	62	479	...	S. 77 57 W.	.52	....	...	540
	May	2	5	3	98	167	310	41	490	...	S. 78 23 W.	.47	....	...	558
	June	2	1	1	92	143	327	37	477	...	N. 85 53 W.	.62	....	...	540
	July	0	1	1	40	156	378	81	459	...	N. 87 51 W.	.74	....	...	558
	August	1	5	3	40	194	374	47	452	...	N. 87 35 W.	.67	....	...	558
	September	1	1	6	52	216	344	50	410	...	N. 89 11 W.	.69	....	...	540
	October	1	3	5	85	202	358	32	430	...	N. 89 19 W.	.65	....	...	558
	November	2	2	5	96	156	327	85	407	...	S. 31 88 W.	.64	....	...	540
	December	0	6	7	101	170	308	73	451	...	N. 87 15 W.	.65	....	...	558
	Spring	10	13	14	284	508	872	160	1451	...	S. 79 56 W.	.48	N. 10½° E.	.05	1656
	Summer	3	7	5	172	493	1079	165	1388	...	S. 77 41 W.	.55	N. 82 W.	.06	1656
	Autumn	4	6	16	233	574	1029	167	1247	...	S. 70 8 W.	.51	S. 4 E.	.05	1638
	Winter	14	17	19	305	554	859	184	1298	...	S. 73 30 W.	.47	S. 73 E.	.03	1625
	The year	31	43	54	994	2129	3839	676	5384	...	S. 75 20 W.	.50	....	...	6575
176. Bellville (Ellisburg).	January	60	77	20	41	117	56	110	77	...	S. 88 0 W.	.21	....	...	279
	February	46	73	14	56	115	57	81	66	...	S. 51 16 W.	.15	....	...	254
	March	60	60	8	50	134	84	109	53	...	S. 53 18 W.	.27	....	...	279
	April	41	56	32	60	85	114	97	55	...	S. 49 2 W.	.25	....	...	270
	May	30	54	24	45	108	114	147	36	...	S. 51 30 W.	.39	....	...	279
	June	19	33	26	43	100	140	136	43	...	S. 49 15 W.	.44	....	...	270
	July	20	35	16	27	91	146	188	35	...	S. 60 41 W.	.54	....	...	279
	August	51	49	28	44	71	117	123	75	...	S. 74 27 W.	.32	....	...	279
	September	32	44	29	48	105	119	97	66	...	S. 53 36 W.	.19	....	...	270
	October	60	58	15	45	135	79	107	59	...	S. 55 58 W.	.26	....	...	279
	November	78	69	19	47	116	58	87	66	...	S. 64 44 W.	.15	....	...	270
	December	48	99	22	57	103	58	85	86	...	S. 45 15 W.	.15	....	...	279
	Spring	131	170	64	155	327	312	353	144	...	S. 51 27 W.	.30	....	...	828
	Summer	90	117	70	114	262	403	447	153	...	S. 60 20 W.	.42	....	...	828
	Autumn	170	171	63	140	356	256	291	191	...	S. 57 4 W.	.23	....	...	819
	Winter	154	249	56	154	335	171	276	229	...	S. 71 31 W.	.14	....	...	812
	The year	545	707	253	563	1280	1142	1367	717	...	S. 58 37 W.	.27	....	...	3287
177. Onondaga.	January	33	27	38	68	274	79	270	203	...	S. 71 47 W.	.64	....	...	496
	February	30	24	32	65	210	82	286	177	...	S. 70 9 W.	.40	....	...	453
	March	67	25	47	78	255	56	302	162	...	S. 65 49 W.	.38	....	...	496
	April	41	35	69	84	208	41	238	244	...	S. 78 24 W.	.30	....	...	480
	May	62	37	43	62	262	75	235	216	...	S. 69 57 W.	.35	....	...	496
	June	35	12	48	66	231	86	253	229	...	S. 66 05 W.	.42	....	...	480
	July	42	19	16	61	206	104	275	269	...	S. 80 34 W.	.49	....	...	496
	August	72	41	32	59	297	48	222	221	...	S. 70 9 W.	.34	....	...	496
	September	51	17	25	79	283	77	213	215	...	S. 61 24 W.	.39	....	...	480
	October	47	22	22	86	302	62	261	190	...	S. 58 22 W.	.42	....	...	496
	November	52	13	31	65	271	79	284	165	...	S. 62 11 W.	.43	....	...	480
	December	68	20	47	51	270	69	306	161	...	S. 66 46 W.	.42	....	...	496
	Spring	170	97	159	224	725	172	775	622	...	S. 65 50 W.	.36	....	...	1472
	Summer	149	72	96	186	734	238	750	719	...	S. 74 10 W.	.41	....	...	1472
	Autumn	150	52	78	230	856	218	758	570	...	S. 60 41 W.	.41	....	...	1456
	Winter	131	71	117	184	754	230	862	541	...	S. 66 30 W.	.42	....	...	1445
	The year	600	292	450	824	3069	858	3145	2452	...	S. 67 58 W.	.39	....	...	5845

(Nos. 178 to 181.) **Central New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
178. Pompey.	January	5	10	6	131	174	201	217	310	...	S. 69° 30′ W.	.50	....	...	527
	February	9	5	8	103	128	217	243	247	...	S. 79 50 W.	.55	....	...	480
	March	16	7	7	127	176	230	227	264	...	S. 65 3 W.	.51	....	...	527
	April	20	23	9	126	195	155	228	264	...	S. 84 19 W.	.26	....	...	510
	May	21	16	8	124	135	244	252	254	...	S. 69 46 W.	.50	....	...	527
	June	11	15	12	120	173	286	234	171	...	S. 55 4 W.	.54	....	...	510
	July	8	3	2	42	135	399	279	184	...	S. 64 58 W.	.71	....	...	527
	August	18	21	3	71	166	327	204	244	...	S. 65 55 W.	.58	....	...	527
	September	12	12	4	76	180	284	210	242	...	S. 66 5 W.	.59	....	..	510
	October	16	12	5	114	156	311	198	242	...	S. 62 10 W.	.43	....	...	527
	November	6	4	7	112	163	246	190	292	...	S. 67 25 W.	.51	....	...	510
	December	9	25	14	124	159	240	171	312	...	S. 69 13 W.	.47	....	...	527
	Spring	57	46	24	377	506	629	707	782	...	S. 67 25 W.	.48	....	...	1564
	Summer	37	39	17	233	474	1012	717	599	...	S. 62 19 W.	.59	....	...	1564
	Autumn	34	28	16	302	499	841	598	776	...	S. 64 39 W.	.54	....	...	1547
	Winter	23	40	28	358	461	658	631	869	...	S. 69 52 W.	.48	....	...	1534
	The year	151	153	85	1270	1940	3140	2653	3026	...	S. 65 49 W.	.52	....	...	6209
179. Cazenovia.	January	24	6	14	49	267	218	225	313	...	S. 68 59 W.	.54	....	...	558
	February	18	19	13	73	180	189	203	321	...	S. 77 37 W.	.46	....	...	508
	March	27	26	25	68	212	182	196	380	...	S. 83 49 W.	.47	....	...	558
	April	43	33	30	88	151	165	174	396	...	N. 89 10 W.	.39	....	...	540
	May	37	15	20	80	177	148	185	454	...	N. 86 49 W.	.48	....	...	558
	June	24	20	15	43	176	189	215	398	...	S. 87 57 W.	.53	....	...	540
	July	13	13	10	48	112	232	284	404	...	S. 89 12 W.	.63	....	...	558
	August	52	16	28	48	187	216	188	381	...	S. 84 24 W.	.53	....	...	558
	September	42	11	16	58	202	228	184	339	...	S. 77 47 W.	.50	....	...	540
	October	33	18	16	56	256	231	184	322	...	S. 69 59 W.	.49	....	...	558
	November	36	16	20	86	190	232	174	326	...	S. 70 23 W.	.50	....	...	540
	December	34	28	25	86	185	221	236	301	...	S. 74 49 W.	.52	....	...	558
	Spring	107	74	75	236	540	495	555	1230	...	S. 88 55 W.	.45	....	...	1656
	Summer	89	49	53	139	475	637	687	1183	...	S. 87 56 W.	.54	....	...	1656
	Autumn	111	45	52	200	648	691	542	987	...	S. 73 47 W.	.47	....	...	1638
	Winter	76	53	52	208	632	628	664	935	...	S. 73 41 W.	.49	....	...	1624
	The year	383	221	232	783	2295	2451	2448	4335	...	S. 79 36 W.	.48	....	...	6574
180. Hamilton.	January	89	25	3	35	219	213	67	404	...	S. 89 32 W.	.45	....	...	558
	February	56	23	10	34	201	176	57	403	...	S. 88 13 W.	.41	....	...	509
	March	54	23	12	46	210	191	65	453	...	N. 88 24 W.	.45	....	...	558
	April	60	45	9	54	178	196	88	390	...	N. 88 18 W.	.41	....	...	540
	May	58	42	9	51	166	249	96	383	...	N. 89 55 W.	.48	....	...	558
	June	51	46	7	45	157	249	112	353	...	S. 77 8 W.	.45	....	...	540
	July	50	38	8	39	169	308	130	312	...	S. 77 8 W.	.51	....	...	558
	August	104	42	15	28	196	248	85	336	...	S. 87 27 W.	.42	....	...	558
	September	48	32	5	28	178	225	126	378	...	S. 87 41 W.	.46	....	...	540
	October	31	19	13	41	170	272	148	360	...	S. 77 19 W.	.51	....	...	558
	November	61	15	10	57	173	197	141	366	...	S. 87 26 W.	.43	....	...	540
	December	64	17	21	32	207	211	121	381	...	S. 86 4 W.	.44	....	...	558
	Spring	172	110	30	151	554	636	249	1226	...	N. 89 44 W.	.43	N. 41° E.	.04	1656
	Summer	205	126	30	112	522	805	327	1001	...	S. 83 10 W.	.45	S. 30 E.	.03	1656
	Autumn	140	66	28	126	521	694	415	1104	...	S. 84 59 W.	.50	S. 64 W.	.04	1638
	Winter	209	65	34	101	627	600	245	1188	...	S. 88 50 W.	.45	N. 30 E.	.02	1625
	The year	726	367	122	490	2224	2735	1236	4519	...	S. 86 43 W.	.46	....	...	6575
181. Oxford.	January	89	81	3	11	140	244	249	237	...	S. 89 17 W.	.51	....	...	527
	February	70	63	6	8	118	201	278	216	...	N. 88 29 W.	.50	....	...	480
	March	99	82	13	28	137	222	250	223		N. 88 22 W.	.46	....	...	527
	April	111	116	19	29	143	194	204	204	...	N. 81 2 W.	.38	....	...	510
	May	136	102	17	16	151	206	212	214	...	N. 83 10 W.	.40	....	...	527
	June	100	82	26	21	117	238	230	206	...	N. 85 38 W.	.44	....	...	510
	July	110	68	6	16	113	256	256	229	...	N. 88 27 W.	.52	....	...	527
	August	165	70	14	24	143	229	225	184		N. 86 58 W.	.43	....	...	527
	September	144	69	7	7	160	215	253	165	...	S. 89 4 W.	.45	....	...	510
	October	130	59	13	19	178	262	232	161	...	S. 78 42 W.	.48	....	...	527
	November	99	72	8	8	141	218	252	222	...	N. 88 58 W.	.45	....	...	510
	December	134	88	6	14	87	265	258	202	...	N. 83 55 W.	.50	....	...	527
	Spring	346	300	49	73	431	622	666	641	...	N. 85 56 W.	.40	....	...	1564
	Summer	375	220	46	61	373	723	711	519	...	N. 88 21 W.	.49	....	...	1564
	Autumn	373	200	28	34	479	695	737	548	...	S. 86 17 W.	.46	....	...	1547
	Winter	293	232	15	33	345	710	785	655	...	N. 88 11 W.	.55	....	...	1534
	The year	1387	952	138	201	1628	2750	2899	2463	...	N. 88 43 W.	.45	....	...	6209

(Nos. 182 to 185.) **Central New York.**—*Continued.*

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
182. Bridge water.	January	4	0	6	7	76	33	69	53	...	S. 62° 10′ W.	.56	....	...	124
	February	11	3	3	8	84	29	48	38	...	S. 50 19 W.	.46	....	...	112
	March	12	4	10	9	83	17	62	51	...	S. 61 1 W.	.43	....	...	124
	April	13	2	23	13	40	20	93	36	...	S. 76 38 W.	.42	....	...	120
	May	7	6	28	15	58	23	95	16	...	S. 56 11 W.	.46	....	...	124
	June	12	6	4	12	58	43	80	25	...	S. 60 31 W.	.53	....	...	120
	July	1	0	6	6	50	47	117	21	...	S. 68 22 W.	.73	....	...	124
	August	5	1	0	4	57	50	96	35	...	S. 82 39 W.	.64	....	...	124
	September	2	0	3	9	82	49	74	21	...	S. 47 5 W.	.65	....	...	120
	October	8	4	7	11	77	44	56	41	...	S. 52 51 W.	.52	....	...	124
	November	8	2	5	12	70	40	65	38	...	S. 56 12 W.	.53	....	...	120
	December	5	9	21	11	40	43	76	43	...	S. 70 17 W.	.45	....	...	124
	Spring	32	12	61	37	181	60	250	103	...	S. 63 11 W.	.45	....	...	368
	Summer	18	7	10	22	165	140	293	81	...	S. 64 34 W.	.63	....	...	368
	Autumn	18	6	15	32	229	133	195	100	...	S. 51 30 W.	.56	....	...	364
	Winter	20	12	30	26	200	105	193	134	...	S. 60 58 W.	.49	....	...	360
	The year	88	37	116	117	775	438	931	418	...	S. 59 59 W.	.52	....	...	1460
183. Whitesboro'.	January	13	8	98	26	40	28	183	38	...	S. 73 56 W.	.26	....	...	217
	February	13	15	75	29	36	43	152	33	...	S. 68 15 W.	.25	....	...	198
	March	20	6	104	25	46	31	174	28	...	S. 73 0 W.	.22	....	...	217
	April	16	6	105	27	27	39	156	44	...	S. 68 21 W.	.12	....	...	210
	May	19	10	118	27	30	42	156	32	...	S. 64 51 W.	.17	....	...	217
	June	6	8	84	21	60	39	178	24	...	S. 57 48 W.	.33	....	...	210
	July	16	5	54	20	54	63	181	41	...	S. 70 14 W.	.46	....	...	217
	August	30	5	86	18	34	29	169	63	...	N. 85 34 W.	.33	....	...	217
	September	9	5	105	30	41	30	158	42	...	S. 63 38 W.	.21	....	...	210
	October	41	16	88	25	33	45	148	38	...	S. 87 54 W.	.22	....	...	217
	November	17	6	87	20	34	46	149	61	...	S. 83 24 W.	.26	....	...	210
	December	34	16	96	28	25	29	133	73	...	N. 68 2 W.	.20	....	...	217
	Spring	55	22	327	79	103	112	486	104	...	S. 68 38 W.	.20	....	...	644
	Summer	52	18	224	59	148	131	528	128	...	S. 73 38 W.	.35	....	...	644
	Autumn	67	27	280	75	108	121	454	141	...	S. 78 5 W.	.23	....	...	637
	Winter	60	39	269	83	101	100	468	144	...	S. 81 49 W.	.23	....	...	632
	The year	234	106	1100	296	460	464	1937	517	...	S. 75 29 W.	.25	....	...	2557
184. Utica.	January	5	4	290	123	101	61	609	109	...	S. 71 9 W.	.29	....	...	682
	February	14	7	293	83	80	73	585	53	...	S. 67 43 W.	.28	....	...	621
	March	7	5	357	97	46	80	618	92	...	S. 73 54 W.	.25	....	...	682
	April	7	10	318	71	99	77	639	39	...	S. 63 32 W.	.30	....	...	660
	May	12	18	237	90	98	117	687	43	...	S. 69 32 W.	.43	....	...	682
	June	0	7	209	99	83	121	711	30	...	S. 72 0 W.	.46	....	...	660
	July	4	1	127	103	73	170	792	32	...	S. 71 59 W.	.61	....	...	682
	August	0	3	226	97	108	108	734	26	...	S. 67 18 W.	.48	....	...	682
	September	5	5	193	104	70	113	746	24	...	S. 45 0 W.	.19	....	...	660
	October	7	8	294	119	101	79	645	49	...	S. 61 25 W.	.20	....	...	682
	November	2	2	273	113	67	89	638	76	...	S. 69 10 W.	.34	....	...	660
	December	7	5	364	105	36	90	632	63	...	S. 63 29 W.	.21	....	...	682
	Spring	26	33	912	258	243	274	1944	174	...	S. 64 14 W.	.30	....	...	2024
	Summer	4	11	562	299	264	399	2237	88	...	S. 70 12 W.	.53	....	...	2024
	Autumn	14	15	760	336	238	281	2029	149	...	S. 67 40 W.	.37	....	...	2002
	Winter	26	16	947	311	217	224	1826	225	...	S. 67 33 W.	.28	....	...	1985
	The year	70	75	3181	1204	962	1178	8036	636	...	S. 68 25 W.	.37	....	...	8035
185. Hartwick.	January	68	17	8	42	354	103	106	294	...	S. 63 38 W.	.42	....	...	527
	February	38	30	19	37	313	64	98	303	...	S. 62 3 W.	.32	....	...	479
	March	56	22	13	34	346	51	121	349	...	S. 75 59 W.	.38	....	...	527
	April	66	18	13	46	285	72	152	308	...	S. 78 40 W.	.38	....	...	510
	May	66	42	18	35	316	101	133	249	...	S. 65 30 W.	.35	....	...	527
	June	36	12	20	29	364	110	175	214	...	S. 53 10 W.	.46	....	...	510
	July	22	20	13	31	422	108	170	206	...	S. 45 24 W.	.50	....	...	527
	August	26	18	33	34	425	101	141	214	...	S. 46 30 W.	.46	....	...	527
	September	31	30	14	38	317	131	139	260	...	S. 47 59 W.	.46	....	...	510
	October	19	26	16	38	411	82	113	287	...	S. 46 54 W.	.40	....	...	527
	November	19	42	15	44	338	87	146	269	...	S. 59 11 W.	.40	....	...	510
	December	59	55	9	44	332	83	132	278	...	S. 68 10 W.	.35	....	...	527
	Spring	188	82	44	115	947	224	406	906	...	S. 73 37 W.	.37	....	...	1564
	Summer	84	50	66	94	1211	319	486	634	...	S. 46 41 W.	.46	....	...	1564
	Autumn	69	98	45	120	1066	300	398	816	...	S. 56 45 W.	.45	....	...	1547
	Winter	165	102	36	123	999	250	336	875	...	S. 66 36 W.	.35	....	...	1533
	The year	506	332	191	452	4223	1093	1626	3231	...	S. 59 48 W.	.39	....	...	6208

(Nos. 186 and 187.) **Central New York.**—*Continued.*

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
186. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	303	282	409	579	668	655	1802	1233		S.85°31′W.	.344		
	Summer	260	168	362	647	937	959	1947	1210		S.71 45 W.	.393		
	Autumn	325	228	383	660	1029	995	1739	1044		S.65 48 W.	.359		
	Winter	340	174	467	739	868	683	1824	1333		S.77 39 W.	.330		
	The year[2]	...	...	...	...	...	..	...	...		S.74 56 W	.353		
No. of miles.	Spring	2326	2576	1858	4672	6623	4676	17436	13132		N.89 30 W.	.417		
	Summer	1600	988	1916	4525	7182	6284	13433	8950		S.71 23 W.	.413		
	Autumn	2328	2114	1739	5543	8664	7626	15828	9094		S.69 21 W.	.400		
	Winter	2585	1219	2535	6409	9800	6165	23323	15768		S.82 29 W.	.447		
	The year[2]	...	...	...	...	...	...	...	...		S.79 23 W.	.416		
M'n vel. in miles p. h'r.	Spring	7.68	9.13	4.54	8.07	9.91	7.14	9.68	10.65					
	Summer	6.15	5.88	5.29	6.99	7.66	6.55	6.90	7.40					
	Autumn	7.16	9.27	4.54	8.40	8.42	7.66	9.10	8.71					
	Winter	7.60	7.01	5.43	8.67	11.29	9.03	12.79	11.83					
187. Aggregate number of observations at all stations. Surface winds.	Spring	4434	3147	4763	7200	10954	9103	16633	17348	542	S.81 18 W.	.32		
	Summer	4087	2362	3319	5911	14482	12907	17182	14356	764	S.66 28 W.	.37		
	Autumn	3839	2319	3770	6840	13299	11560	16080	15485	462	S.68 24 W.	.36½		
	Winter	4127	2767	4671	7119	12282	9832	15858	16756	369	S.74 36 W.	.32½		
	The year	16487	10595	16523	27070	51017	43402	65753	63945	2137	S.72 11 W.	.35		
Motion of clouds.	Spring	595	294	1220	726	1335	1582	5720	3545	...	N.87 21 W.	.49½		
	Summer	747	250	910	613	1466	1909	6105	3495	...	N.89 0 W.	.54		
	Autumn	634	191	948	593	1481	1881	5927	3334	...	S.89 20 W.	.54		
	Winter	458	156	1075	578	1240	1302	5918	3524	...	N.86 22 W.	.54½		
	The year	2434	891	4153	2510	5522	6674	23670	13898	...	N.88 25 W.	.53		
2 preceding combined.	Spring	5029	3441	5983	7926	12289	10685	22353	20893	542	S.84 1 W.	.31	N. 43° E.	.07
	Summer	4835	2612	4229	6524	15948	14816	23287	17851	764	S.72 31 W.	.40½	S. 37½ W.	.05
	Autumn	4472	2510	4718	7433	14780	13441	22007	18819	462	S.73 12 W.	.39	S. 35 W.	.04
	Winter	4585	2923	5746	7697	13522	11134	21776	20280	369	S.79 14 W.	.35½	N. 16 E.	.02
	The year	18921	11486	20676	29580	56539	50076	89423	77843	2137	S.76 41 W.	.31½		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.99	6.91	8.27	10.56	8.68
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	3.09	2.72	2.97	3.48	3.06
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	3.75	2.85	3.31	4.72	3.61
Excess of the latter over the former	+.66	+.13	+.34	+1.24	+.55

[2] Computed from the resultants for the seasons.

(Nos. 188 to 190.) **Northeastern Pennsylvania.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Berwick,	John Eggert,	5	10	1856 to 1865 inclusive.
Blooming Grove,	John Grathwohl,	4	8	1865 to 1869 inclusive.
Carpenter,	E. L. McNett,	0	5	1862.
Dyberry,	Theodore Day,	4	11	1865 to 1869 inclusive.
Hamlinton,	....	0	4	1869.
Honesdale,	M. H. Cobb,	0	2	1851 and 1852.
Milford,	Ralph Bull,	0	1	1840.
North Abington,	Rodman Sisson,	1	10	1868 and 1869.

(Nos. 188 to 190.) **Northeastern Pennsylvania.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Salem (Wayne County),	J. D. Stocken,	0	5	1869.
Silver Lake,	E. Rose,	1	9	1839, 1840 and 1841.
Stevensville,	J. Russell Dutton,	0	10	1866 and 1867.
Susquehanna Depot,	H. H. Atwater,	0	2	1863.
Towanda,	Selden J. Coffin & others,[1]	0	7	1861.
Wilkesbarre,	V. L. Maxwell,	0	2	1841.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
188. Silver Lake.	The year	153	25	0	18	120	180	323	275	...	N. 80°19′W.?[2]	.55	....	...	365
189. Surface wind at Berwick in the year 1857.[3] No. of observations.	Spring	6	8	64	21	10	20	93	28	...	S. 79 56 W.	.170			
	Summer	8	10	99	15	17	24	88	12	...	S. 8 43 E.	.077			
	Autumn	1	2	13	3	9	2	42	12	...	S. 87 21 W.	.393			
	Winter	12	16	93	26	11	19	178	48	...	N. 82 0 W.	.253			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 83 38 W.	.201			
No. of miles.	Spring	20	16	142	236	114	72	582	282	...	S. 78 50 W.	.352			
	Summer	20	80	106	46	86	62	442	68	...	S. 77 11 W.	.483			
	Autumn	2	2	113	69	132	0	447	152	...	S. 79 52 W.	.405			
	Winter	24	58	268	197	131	121	1418	291	...	S. 86 8 W.	.495			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 81 5 W.	.423			
M'n vel. in miles p.h'r.	Spring	3.33	2.00	2.22	11.24	11.40	3.60	6.26	10.07						
	Summer	0.25	0.80	1.07	3.17	5.06	2.58	5.02	5.67						
	Autumn	2.00	1.00	8.69	23.00	14.67	0	10.64	12.67						
	Winter	2.00	3.62	2.88	7.58	11.91	6.37	7.97	6.06						
190. Aggregate number of observations at all stations. Surface winds.	Spring	402	195	556	406	457	493	1044	1180	606	N. 88 42 W.	.23½			
	Summer	372	229	858	220	562	848	1430	1061	1085	S. 88 49 W.	.24			
	Autumn	459	140	585	415	544	651	1160	1148	916	N. 87 10 W.	.24			
	Winter	406	147	497	329	325	466	1215	1242	731	N. 72 30 W.	.31			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 81 21 W.	.25½			
Motion of clouds.	Spring	220	46	106	178	134	311	569	633	...	N. 77 14 W.	.45½			
	Summer	211	59	87	144	223	511	909	523	...	S. 87 25 W.	.53			
	Autumn	271	32	73	215	217	487	653	706	...	N. 86 22 W.	.47			
	Winter	142	22	75	147	118	221	581	729	...	N. 74 26 W.	.54			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 82 43 W.	.49			
2 preceding combined.	Spring	622	241	662	584	591	804	1613	1813	606	N. 77 15 W.	.30	N. 55° E.	.03½	
	Summer	583	288	945	364	785	1359	2339	1584	1085	S. 88 10 W.	.32½	S. 2 W.	.05½	
	Autumn	730	172	658	630	761	1138	1813	1854	916	N. 86 48 W.	.31	S. 20 E.	.03	
	Winter	548	169	572	476	443	687	1796	1971	731	N. 73 16 W.	.37½	N. 31½ W.	.07½	
	The year[4]	...	...	...	...	...	...	...	...	...	N. 81 54 W.	.32½			

[1] W. H. Dean and John H. Kingsbery.
[2] Computed from observations recorded for sixteen points of the compass.
[3] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.86	3.00	10.92	6.22	6.50
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.99	.23	4.29	1.57	1.31
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.06	1.45	4.42	3.08	2.75
Excess of the latter over the former	+1.07	+1.22	+.13	+1.51	+1.44

[4] Computed from the resultants for the seasons.

(Nos. 191 to 196.) **Eastern Pennsylvania.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bethlehem,	Mr. C. Kummer and L. R. Huebner,	1	2	1843 and 1850.
Bustleton,	Isaac C. Martindale,	0	1	1854.
Byberry,	John Comly and others,[2]	4	6	1854 and 1860 to 1863 inclusive.
Danville,	C. H. Frick,	0	3	1839 and 1854.
Easton,	Traill Green, LL.D., and others,[3]	7	11	1838, 1839, 1848 and 1855 to 1859 inclusive.
Ephrata,	W. H. Spera,	3	9	1865 to 1869 inclusive.
Falsington,	Ebenezer Hance,	9	0	1860 and 1862 to 1869 inclusive.
Fox Chase,	....	0	5	1860.
Germantown,	Mr. Wister and others,[4]	9	6	1843, 1844 and 1860 to 1869.
Harrisburg,[1]	Dr. J. Heisley and others,[5]	21	7	1840, 1841, 1854 to 1859 and 1861 to 1869, both inclusive.
Haverford,	Haverford College,	1	4	1839, 1840 and 1841.
Lancaster,	Conservatory of Arts,	2	1	1839, 1840, 1841 and 1856.
Lewisburg,	Prof. C. S. James,	8	11	1856 to 1860 and 1865 to 1869, both inclusive.
Morrisville,	Ebenezer Hance,	7	0	1854 to 1859 inclusive, and 1861.
Mount Joy,	Jacob R. and Mary E. Hoffer,	12	10	1857 to 1869 inclusive.
Nazareth,	H. A. Brickenstein & others,[6]	6	8	1856, 1857 and 1861 to 1866 inclusive.
Newtown,	L. H. Parsons,	1	9	1839, 1840 and 1841.
Norristown,	Mr. Coison and Rev. J. G. Ralston,	10	4	1843, 1844 and 1854 to 1863 inclusive.
Northumberland,	Andrew C. Huston,	1	10	1839, 1840 and 1841.
North Whitehall,	Edward Kohler,	10	8	1856 to 1858 and 1860 to 1867, both inclusive.
Phœnixville,	J. T. Coffman,	0	6	1869.
Plymouth Meeting,	Marcus H. Corson,	1	11	1868 and 1869.
Port Carbon,	Lyceum,	1	3	1840 and 1841.
Pottsville,	John Porter and Dr. A. Heger,	1	5	1839 and 1855.
Reading,	C. F. Egelmann and John L. Raser,	4	7	1832 to 1841 and 1866 to 1869, both inclusive.
Shamokin,	P. Friel,	5	11	1857 to 1863 inclusive.
Sigfried's Bridge,	(See North Whitehall.)			
Silver Spring,	H. G. Bruckhart,	3	8	1863 to 1867, inclusive.
South Bethlehem,	N. C. Tooker & A. M. Mayer,	1	6	1867 and 1868.
State Hospital,	Joseph C. Martindale,	0	3	1861.
Stroudsburg,	A. M. Stokes,	1	3	1839, 1840 and 1841.
Summit Hill,	M. Abbott,	0	10	1852 and 1853.
Trappe,	....	0	1	1849.
Valley Forge,	C. P. Jones,	0	3	1849.
West Haverford,	Paul Swift,	6	4	1854 to 1857 and 1860 to 1863, both inclusive.

Place of observation.	Time of the year.	RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
191. Northumberland.	The year	138	136	75	100	150	46	199	127	124	N. 48° 19′ W.	.10		
192. Lancaster.	The year	190	278	79	247	224	415	190	515		N. 81 55 W.	.19		
193. Newtown (1841).	The year	30	199	12	97	30	261	72	325		N. 66 7 W.	.28		
194. Easton.	Spring	88	230	51	295	201	356	220	594	251	S. 63 23 W.	.23	S. 11° E.	.17
	Summer	131	179	63	358	147	410	184	579	255	S. 87 0 W.	.19	S. 34 E.	.09
	Autumn	148	276	56	243	99	284	291	699	176	N. 57 1 W.	.29½	N. 5½ W.	.10
	Winter	132	269	65	129	59	293	314	678	170	N. 55 47 W.	.38	N. 27 W.	.16
	The year[7]	...	...	...	...	...	...	...	...	...	N. 74 45 W.	.25		

[1] Two Independent sets of observations during a part of the time.
[2] John W. Saurman and Isaac C. Martindale.
[3] C. Elliott, James H. and Selden J. Coffin and George R. Houghton.
[4] S. Ebert and Thomas and J. Meehan.
[5] W. O. Hickok and K. A. Martin.
[6] J. C. Harvey, O. T. Huebner and L. E. Ricksecker.
[7] Computed from the resultants for the seasons.

(Nos. 195 and 196.) **Eastern Pennsylvania.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.
195. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	452	486	396	563	542	837	1388	1030	...	N. 78° 13′ W.	.297	North.	.03
		Summer	272	344	455	669	620	1210	1459	949	...	S. 67 12 W.	.289	S. 9 E.	.15
		Autumn	445	445	389	579	531	985	1513	1520	...	N. 84 48 W.	.294	S. 14 W.	.01
		Winter	400	517	481	448	259	608	1404	2009	...	N. 60 33 W.	.354	N. 16 W.	.14
		The year[2]	...	...	...	...	...	...	...	...	...	N. 82 39 W.	.292		
	No. of miles.	Spring	4180	4721	1676	2803	3443	4968	8020	16246	...	N. 57 52 W.	.376	N. 5 E.	.08
		Summer	1338	2062	2035	3097	2716	6753	5704	5351	...	S. 70 8 W.	.276	S. 17 E.	.22
		Autumn	3139	2624	1715	3159	2881	5976	7684	12324	...	N. 73 35 W.	.337	S. 4 E.	.02
		Winter	3194	3147	2160	1873	1560	3613	9819	17967	...	N. 56 47 W.	.482	N. 28 W.	.17
		The year[2]	...	...	...	...	...	...	...	...	...	N. 70 30 W.	.347		
	M'n vel. in miles p. h'r.	Spring	9.25	9.71	4.23	4.98	6.35	5.94	5.78	9.97					
		Summer	4.92	5.99	4.47	4.63	4.38	5.58	3.98	5.64					
		Autumn	7.05	5.90	4.41	5.46	5.43	6.07	5.08	8.11					
		Winter	7.98	6.09	4.49	4.18	6.02	5.94	6.99	8.94					
196. Aggregate number of observations at all stations.	Surface winds.	Spring	2553	3509	3269	3159	2316	4074	7241	7468	3456	N. 68 25 W.	.21½	N. 52½ E.	.03
		Summer	2443	2249	2559	3136	3158	5773	7004	4694	5384	S. 75 20 W.	.23	South.	.12
		Autumn	3087	2783	2563	2699	2295	4330	6879	7040	5099	N. 71 54 W.	.24	N. 34½ W.	.01
		Winter	2731	3749	2957	2210	1298	3463	7398	8729	4173	N. 54 47 W.	.29½	N. 12 W.	.11
		The year	10814	12290	11348	11204	9067	17640	28522	27931	18112	N. 73 23 W.	.23		
	Motion of clouds.	Spring	906	1356	1353	808	643	2140	5701	3322	...	N. 77 27 W.	.42	N. 53 E.	.05
		Summer	903	861	1318	794	929	3192	5930	2705	...	S. 87 34 W.	.46	S. 4½ W.	.08
		Autumn	868	897	1017	824	823	2457	5216	2971	...	N. 86 9 W.	.45	South.	.03
		Winter	732	1193	1104	417	337	1777	5619	3406	...	N. 73 26 W.	.50½	N. 23 W.	.09
		The year[2]	...	...	...	...	...	...	...	...	...	N. 82 12 W.	.45½		
	2 preceding combined.	Spring	3459	4865	4622	3967	2959	6214	12942	10790	3456	N. 72 47 W.	.28	N. 57° E.	.03
		Summer	3346	3110	3877	3930	4087	8965	12934	7399	5384	S. 81 11 W.	.30	S. 2 W.	.11
		Autumn	3955	3680	3580	3523	3118	6787	12095	10011	5099	N. 77 59 W.	.30	S. 22½ W.	.01
		Winter	3463	4942	4061	2627	1635	5240	13017	12135	4173	N. 62 26 W.	.35	N. 9½ W.	.10
		The year	14223	16597	16140	14047	11799	27206	50988	40335	18112	N. 77 29 W.	30		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.32	4.86	6.16	7.07	6.35
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.17	1.30	1.81	2.50	1.85
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.75	1.34	2.08	3.41	2.20
Excess of the latter over the former	+.58	+.04	+.27	+.91	+.35

[2] Computed from the resultants for the seasons.

(Nos. 197 and 197(*a*).) **Pennsylvania.**

Average duration of winds in each month in the State of Pennsylvania, deduced from observations made previous to the year 1848, at 40 different stations for an aggregate period of forty-eight years and eleven months.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
197. Pennsylvania.	January	1.17	.47	2.53	.28	1.97	.11	2.73	.17	1.26	.30	4.49	.44	5.41	.79	5.97	.27	2.64	N. 80° 52′ W.	.28
	February	1.13	.24	1.94	.17	1.45	.14	2.02	.06	1.04	.15	4.31	.53	4.94	.57	6.42	.31	2.58	N. 78 5 W.	.38
	March	1.72	.49	2.27	.15	1.85	.11	2.36	.12	1.62	.32	4.63	.51	5.45	.61	5.66	.18	2.95	N. 82 58 W.	.30
	April	1.63	.45	2.56	.18	2.19	.09	3.04	.23	2.20	.35	4.29	.35	4.64	.58	5.01	.34	1.87	S. 89 9 W.	.20
	May	1.16	.28	1.83	.21	1.34	.19	2.61	.29	1.96	.54	4.84	.37	4.97	.70	6.29	.54	2.88	S. 88 45 W.	.33
	June	1.24	.10	1.61	.11	1.47	.20	2.45	.13	2.03	.27	4.88	.45	5.20	.59	5.18	.30	3.79	S. 83 31 W.	.33
	July	1.21	.19	1.41	.11	1.46	.11	1.91	.27	2.01	.44	5.12	.54	6.52	.93	4.89	.22	3.66	S. 82 32 W.	.41
	August	1.13	.22	1.91	.14	2.18	.36	2.78	.25	2.59	.18	4.97	.34	5.42	.63	3.55	.19	4.16	S. 64 10 W.	.26
	September	1.47	.18	1.43	.15	2.05	.10	1.98	.34	2.20	.23	3.84	.33	5.33	.63	5.45	.37	3.92	N. 89 3 W.	.31
	October	1.39	.12	1.53	.05	1.58	.15	2.42	.13	1.78	.37	4.40	.48	6.00	.55	6.44	.45	3.16	N. 88 24 W.	.37
	November	1.48	.14	1.55	.18	1.96	.05	1.84	.09	1.30	.19	3.76	.47	6.84	.74	6.19	.43	2.79	N. 79 3 W.	.39
	December	1.64	.28	2.03	.11	1.71	.06	1.89	.10	1.26	21	4.36	.77	6.39	.85	6.60	.24	2.50	N. 79 10 W.	.44
	The year	16.37	3.16	22.60	1.84	21.21	1.67	28.03	2.18	21.25	3.55	53.89	5.58	67.11	8.17	67.65	3.84	36.90	N. 88 15 W.	.32

(No. 197(*a*).) **Pennsylvania.**—*Continued*

If to the foregoing observations we add those made at seventeen additional stations in Pennsylvania and New Jersey, previous to the year 1848, and for an aggregate period of fourteen years, we obtain the following results:—

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
197(*a*). Pennsylvania and New Jersey, 57 stations. 63 years.	January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 77° 47′ W.	.26	N. 22° E.	.05
	February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 49 W.	.33½	N. 34 W.	.09
	March	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 10 W.	.25	N. 41 E.	.04
	April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 48 W.	.14	S. 86 E.	.14
	May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 23 W.	.28	S. 14 W.	.05
	June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 77 33 W.	.30	S. 8 W.	.07
	July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 53 W.	.33	S. 33⅓ W.	.09
	August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 26 W.	.19	S. 44 E.	.15
	September	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 28 W.	.24	N. 42⅓ E.	.03
	October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 25 W.	.32	N. 60 W.	.04
	November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 6 W.	.32	N. 20 W.	.08
	December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 58 W.	.36	N. 31½ W.	.11

(Nos. 198 to 209.) **Northeastern New York.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Adams,	Mr. Webb & C. D. Potter, M.D.,	0	11	1843, 1860 and 1861.
Canton,	E. W. Johnson,	3	1	1854 to 1857 inclusive.
Depauville,	Henry Hass,	4	7	1865 to 1869 inclusive.
Gallop's Island,	Mr. Gill,	0	1	1843.
Gouverneur,	Academy and others,[1]	22	10	1831 to 1835, 1838 to 1845, 1854, 1855 and 1861 to 1868, all inclusive.
Houseville,	Walter D. Yale,	3	9	1860 and 1865 to 1869 inclusive.
Leyden,	C. C. Merriam,	0	10	1869.
Lowville,	Academy and J. C. House,	20	3	1827 to 1833, 1835, 1837, 1839 to 1848, 1855 and 1856, all inclusive.
Madison Barracks,	Post Surgeon,	8	8	1831, 1842 to 1846, and 1849 to 1852, all inclusive.
Madrid,	E. A. Dayton,	1	6	1854 to 1857 inclusive.
Malone,	Franklin Academy,	3	0	1839, 1840 and 1842.
Morley,	Ezra Parmelee,	0	9	1849.
North Hammond,	Charles A. Wooster,	3	7	1866 to 1869 inclusive.
Ogdensburg,	The author and W. E. Guest,	7	7	1838 and 1855 to 1863 inclusive.
Plattsburg,	Academy & Joseph W. Taylor,	5	3	1841, 1842, 1847, 1848, 1849 and 1856.
Plattsburg Barracks,	Post Surgeon,	8	4	1840, 1842 to 1846 and 1849 to 1852, both inclusive.
Potsdam,	St. Lawrence Academy,	21	0	1828 to 1848 inclusive.
Rouse's Point,	Post Surgeon,	9	0	1839 and 1845 to 1852 inclusive.
Sackett's Harbor,	(See Madison Barracks.)			
Smithville,	J. Everett Breed,	1	11	1854, 1855 and 1856.
Somerville,	Dr. F. B. Hough,	1	0	1850.
Theresa,	S. O. Gregory,	6	10	1861 to 1868.
Watertown Arsenal,	Post Surgeon,	5	11	1837 to 1840, 1843 and 1844.
West Day,	Jude M. Young,	0	10	1858 and 1859.

[1] Dr. P. O. Williams and C. H. Russell.

(Nos. 198 to 201.) **Northeastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
198. Sackett's Harbor.	Spring	143	445	151	357	347	769	368	422	...	S. 51° 48′ W.	.21			
	Summer	88	219	68	296	407	940	321	200	...	S. 37 47 W.	.45			
	Autumn	124	362	80	402	356	386	249	419	...	S. 39 44 W.	.13			
	Winter	120	586	156	336	302	375	249	511	...	N. 36 36 W.	.04			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 45 0 W.	.19			
(198*a*). Watertown Arsenal.	Spring	77	140	148	131	128	340	260	275	...	S. 75 42 W.	.24½			
	Summer	53	83	135	106	188	468	275	144	...	S. 49 7 W.	.40			
	Autumn	101	124	119	105	122	293	339	240	...	S. 84 5 W.	.30			
	Winter	93	128	67	35	74	262	327	348	...	N. 75 49 W.	.44½			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 79 9 W.	.32½			
199. Lowville.	January	184	14	14	184	271	62	103	346	...	S. 89 10 W.	.19	....	...	589
	February	190	20	20	166	245	63	74	316	...	S. 89 58 W.	.17	....	...	537
	March	202	9	18	159	268	77	85	360	...	N. 88 50 W.	.22	....	...	589
	April	197	21	14	169	214	62	150	313	...	N. 78 41 W.	.24	....	...	570
	May	211	26	17	149	264	106	133	272	...	S. 89 20 W.	.21	....	...	589
	June	175	15	16	130	242	108	211	243	...	S 80 39 W.	.30	....	...	570
	July	209	10	11	89	244	135	257	223	...	S. 82 38 W.	.38	....	...	589
	August	211	44	34	79	263	115	245	187	...	S. 81 3 W.	.32	....	...	589
	September	223	36	17	111	266	111	168	208	...	S. 79 38 W.	.24	....	...	570
	October	183	55	27	148	312	97	122	234	...	S. 62 16 W.	.18	....	...	589
	November	188	32	17	157	273	89	119	265	...	S. 77 26 W.	.19	....	...	570
	December	288	9	5	160	250	91	110	265	...	N. 76 51 W.	.21	....	...	589
	Spring	610	56	49	477	746	245	368	945	...	N. 85 32 W.	.23	....	...	1748
	Summer	595	69	61	298	749	358	713	653	...	S. 84 28 W.	.32	....	...	1748
	Autumn	594	123	61	416	851	297	409	707	...	S. 75 28 W.	.19	....	...	1729
	Winter	662	43	39	510	766	216	287	927	...	N. 84 18 W.	.19	....	...	1715
	The year	2461	291	210	1701	3112	1116	1777	3232	...	S. 87 16 W.	.24	....	...	6940
200. Gouverneur.	January	76	73	16	50	113	148	126	142	...	S. 83 45 W	.33	....	...	372
	February	79	69	18	35	89	186	136	64	...	S. 71 32 W	.32	....	...	338
	March	104	82	5	19	95	223	108	108	...	S. 87 54 W.	.34	....	...	372
	April	92	97	20	36	102	155	90	128	...	N. 71 27 W.	.22	....	...	360
	May	84	80	6	28	105	238	91	112	...	S. 73 33 W.	.36	....	...	372
	June	71	82	16	35	107	239	69	101	...	S. 64 30 W.	.32	....	...	360
	July	58	29	8	14	72	309	138	116	...	S. 70 46 W.	.59	....	...	372
	August	70	98	27	45	66	226	97	115	.	S. 79 46 W.	.30	....	...	372
	September	67	62	4	47	71	206	130	133	..	S. 81 29 W.	.41	....	...	360
	October	79	66	17	24	80	219	134	125	...	S. 82 48 W.	.41	....	...	372
	November	108	58	28	28	117	136	115	130	...	N. 87 53 W.	.33	....	...	360
	December	120	120	18	26	93	172	98	97	...	N. 76 20 W.	.29	....	...	372
	Spring	280	259	31	83	302	616	289	348	...	S. 82 53 W.	.32	....	...	1104
	Summer	199	209	51	94	245	774	304	332	...	S. 71 20 W.	.40	....	...	1104
	Autumn	254	186	49	99	268	561	379	388	...	S. 84 39 W.	.37	....	...	1092
	Winter	275	262	52	111	295	506	360	303	...	S. 84 44 W.	.29	....	...	1082
	The year	1008	916	183	387	1110	2457	1332	1371	...	S. 80 24 W.	.34	....	...	4382
201. Potsdam.	January	90	229	5	25	183	407	146	217	...	S. 78 30 W.	.32	....	...	651
	February	90	209	7	42	151	379	104	206	...	S. 79 22 W.	.26	....	...	594
	March	61	250	10	31	222	408	96	224	...	S. 67 45 W.	.28	....	...	651
	April	83	251	16	47	190	356	85	232	...	S. 79 17 W.	.22	....	...	630
	May	78	219	16	56	172	483	98	180	...	S. 61 34 W.	.31	....	...	651
	June	56	167	10	50	170	522	97	188	...	S. 58 30 W.	.51	....	...	630
	July	56	100	3	52	180	641	63	207	...	S. 54 17 W.	.54	....	...	651
	August	88	130	17	44	165	544	102	212	...	S. 63 45 W.	.45	....	...	651
	September	71	148	8	35	155	538	97	208	...	S. 63 58 W.	.43	....	...	630
	October	78	168	13	42	209	501	95	196	...	S. 58 48 W.	.39	....	...	651
	November	85	238	11	44	191	384	132	175	...	S. 67 08 W.	.31	....	...	630
	December	83	287	8	29	158	394	138	205	...	S. 85 31 W.	.26	....	...	651
	Spring	222	720	42	134	584	1247	279	636	...	S. 68 37 W.	.26	....	...	1932
	Summer	200	397	30	146	515	1707	262	607	...	S. 58 20 W.	.45	....	...	1932
	Autumn	234	554	32	121	555	1423	324	579	...	S. 63 34 W.	.36	....	...	1911
	Winter	263	725	20	96	492	1180	388	628	...	S. 80 42 W.	.29	....	...	1896
	The year	919	2396	124	497	2146	5557	1253	2450	...	S. 66 19 W.	.33	....	...	7671

[1] Computed from the resultants for the seasons.

(Nos. 201(*a*) to 204.) **Northeastern New York.**—*Continued.*

201(*a*). Ogdensburg. Computed from observations made by the author during the year 1838, by means of a self-registering vane, which kept a continuous record.

	d	h	m		d	h	m		d	h	m		d	h	m
North	7	5	15	East	2	15	15	South	20	4	0	West	17	5	45
N. by E.	5	22	15	E. by S.	2	8	15	S. by W.	21	4	45	W. by N.	11	14	7
N. N. E.	8	0	15	E. S. E.	2	15	45	S. S. W.	22	6	45	W. N. W.	8	19	8
N. E. by N.	10	15	15	S. E. by E.	2	13	15	S. W. by S.	22	16	30	N. W. by W.	9	8	53
N. E.	14	1	52	S. E.	2	17	29	S. W.	29	12	15	N. W.	8	20	38
N. E. by E.	16	12	30	S. E. by S.	4	3	8	S. W. by W.	25	21	30	N. W. by N.	9	15	37
E. N. E.	13	4	38	S. S. E.	7	4	14	W. S. W.	16	23	45	N. N. W.	8	2	15
E. by N.	4	21	30	S. by E.	8	7	31	W. by S.	13	6	0	N. by W.	6	9	45

Direction of resultant for the year S. 58° 34′ W.
Ratio of resultant to sum of winds .29½.

The resultants for the different months were as follows:—

January	S. 39° 40′ W.	.24	May	S. 45° 33′ W.	.23½	September	S 45° 3′ W.	.17½
February	S. 85 20 W.	.43	June	S. 45 46 W.	.36	October	S. 62 21 W.	.25
March	N. 27 49 E.	.18	July	S. 47 21 W.	.48	November	S. 51 19 W.	.38
April	S. 83 4 W.	.43	August	S. 63 51 W.	.32	December	S. 39 50 W.	.43½

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
202. Somerville.	The year	190	162	39	50	302	332	231	145	...	S. 61° 37′ W.?	.30	....	...	365
203. Malone.	January	9	6	2	10	34	55	44	26	...	S. 61 15 W.	.56	....	...	93
	February	12	10	1	5	25	46	57	14	...	S. 70 2 W.	.52	....	...	85
	March	7	18	3	16	13	40	56	33	...	S. 83 12 W.	.45	....	...	93
	April	15	23	5	15	17	31	42	32	...	N. 86 36 W.	.40	....	...	90
	May	10	29	3	6	20	34	58	26	...	S. 51 7 W.	.52	....	...	93
	June	5	13	2	10	23	38	56	33	...	S. 77 32 W.	.50	....	...	90
	July	9	7	3	5	21	35	81	25	...	S. 84 3 W.	.65	....	...	93
	August	16	27	10	7	18	37	57	14	...	S. 86 0 W.	.33	....	...	93
	September	7	11	2	6	19	50	66	19	...	S. 73 10 W.	.58	....	...	90
	October	10	22	5	10	14	43	61	21	...	N. 87 58 W.	.36	....	...	93
	November	8	24	6	6	19	41	62	14	...	S. 76 56 W.	.42	....	...	90
	December	14	22	4	8	19	34	61	24	...	S. 88 24 W.	.43	....	...	93
	Spring	32	70	11	37	50	105	156	91	...	S. 88 44 W.	.38	....	...	276
	Summer	30	47	15	22	62	110	194	72	...	S. 80 57 W.	.47	....	...	276
	Autumn	25	57	13	22	52	134	189	54	...	S. 76 55 W.	.49	....	...	273
	Winter	35	38	7	23	78	135	162	64	...	S. 71 53 W.	.49	....	...	271
	The year	122	212	46	104	242	484	701	281	...	S. 79 4 W.	.45	....	...	1096
204. Plattsburg Academy.	January	63	20	1	17	96	23	31	59	...	S. 85 0 W.	.21	....	...	155
	February	58	19	2	21	67	13	32	70	...	N. 63 44 W.	.32	....	...	141
	March	104	16	4	9	76	11	24	66	...	N. 37 55 W.	.30	....	...	155
	April	66	12	4	15	111	7	15	70	...	S. 86 48 W.	.15	....	...	150
	May	74	11	8	33	111	7	28	38	...	S. 34 17 W.	.12	....	...	155
	June	33	6	3	29	134	15	30	50	..	S. 37 55 W.	.41	....	...	150
	July	27	6	7	44	84	16	53	73	...	S. 59 21 W.	.28	....	...	155
	August	83	5	17	33	127	25	23	37	...	S. 18 39 W.	.22	....	...	155
	September	43	5	5	37	75	10	18	67	...	N. 55 37 W.	.15	....	...	150
	October	60	6	0	24	101	22	38	59	...	S. 69 33 W.	.26	....	...	155
	November	74	2	2	33	62	17	45	65	...	N. 72 31 W.	.26	....	...	150
	December	110	5	1	4	90	19	37	44	...	N. 61 56 W.	.28	....	...	155
	Spring	244	39	16	57	298	25	67	174	...	N. 72 28 W.	.14	....	...	460
	Summer	103	17	27	106	345	56	106	160	...	S. 32 2 W.	.29	....	...	460
	Autumn	217	13	7	94	238	49	101	191	...	N. 83 17 W.	.21	....	...	455
	Winter	231	44	4	42	253	55	100	173	...	N. 72 15 W.	.23	....	...	451
	The year	795	113	54	299	1134	185	374	698	...	S. 80 42 W.	.18	....	...	1826

(Nos. 205 to 209.) **Northeastern New York.**—*Continued.*

Place and kind of observations		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
205. Plattsburg Barracks.		Spring	305	318	110	240	588	362	304	384	...	S. 57° 0′ W.	.15		
		Summer	131	163	141	323	616	393	292	375	...	S. 29 50 W.	.29		
		Autumn	220	235	74	197	496	361	379	465	...	S. 73 16 W.	.07½		
		Winter	546	292	101	134	473	330	334	542	...	N. 58 37 W.	.23		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 60 11 W.	.14		
206.		Spring	549	357	126	297	886	387	371	558	...	S. 68 56 W.	.14		
		Summer	234	180	168	429	961	449	398	535	...	S. 30 27 W.	.29		
		Autumn	437	248	81	291	734	410	480	656	...	S. 78 45 W.	.23½		
		Winter	777	336	105	176	726	385	434	715	...	N. 61 55 W.	.23		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 46 3 W.	.24½		
207. Rouse's Point, 1839		The year	43	34	14	54	68	53	43	56	...	S. 49 50 W.	.16		
208. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	243	599	62	89	233	1190	338	414	...	S. 79 5 W.	.288	N. 54° E.	.04
		Summer	172	308	33	92	216	1212	335	294	...	S. 63 30 W.	.432	S. 31 W.	.13
		Autumn	292	377	48	77	250	1017	395	328	...	S. 76 35 W.	.348	N. 83 W.	.02
		Winter	286	670	54	74	269	999	407	438	..	S. 89 26 W.	.261	N. 34½ E.	.10
		The year[2]	...	...	...	...	...	...	...	...	...	S. 75 25 W.	.328		
	No. of miles.	Spring	1312	3706	183	601	1368	7560	2380	3131	...	S. 81 35 W.	.326	N. 35 E.	.10
		Summer	761	1692	100	419	1091	8047	2093	1879	...	S. 63 14 W.	.497	S. 35 W.	.12
		Autumn	1352	1873	125	299	1622	6773	2618	1893	...	S. 69 48 W.	.440	S. 57 W.	.04
		Winter	945	3481	216	592	2459	6862	34035	3194	...	S. 74 28 W.	.356	N. 49 E.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 71 23 W.	.399		
	M'n vel. in miles p.h'r.	Spring	5.40	6.19	2.95	6.75	5.87	6.35	7.04	7.56					
		Summer	4.42	5.49	3.03	4.55	5.05	6.64	6.25	6.39					
		Autumn	4.63	4.97	2.60	3.88	6.49	6.66	6.63	5.77					
		Winter	4.00	5.20	4.00	8.00	9.14	6.87	8.36	7.29					
209. Aggregate number of observations at all stations.	Surface winds.	Spring	3402	3740	666½	1914	4909½	6252½	3347½	4741½	593½	S. 78 45 W.	.22	N. 33½ E.	.05
		Summer	2712½	2123½	591	1819	5639½	7834½	3835½	3669½	1032	S. 56 38 W.	.35	S. 25 W.	.11
		Autumn	3292½	2931	614½	1983½	5577½	5990	3707	4311	625	S. 67 55 W.	.26	S. 4 W.	.01
		Winter	3547½	3891	644½	1841	4897	5577	3593	4813	521	S. 85 58 W.	.21½	N. 20 E.	.08
		The year	12954½	12685½	2516½	7557½	21023½	25654	14483	17535	2771½	S. 70 8 W.	.25½		
	Motion of clouds.	Spring	281	419	56	56	243	1217	1026	490	..	S. 83 13 W.	.49	N. 49 E.	.04
		Summer	281	267	90	73	344	1567	1690	574	...	S. 77 40 W.	.60	S. 58 W.	.09
		Autumn	342	401	60	25	319	1437	1262	482	...	S. 81 48 W.	.53	N. 52 W.	.01
		Winter	295	577	15	21	331	1261	1010	398	...	S. 81 45 W.	.45	N. 75 E.	.07
		The year[2]	...	...	...	...	...	...	...	...	...	S. 80 54 W.	.52		
	2 preceding combined.	Spring	3683	4159	722½	1970	5152½	7469½	4373½	5231½	593½	S. 79 44 W.	.25½	N. 30½° E.	.05
		Summer	2993½	2390½	681	1892	5983½	9401½	5525½	4243½	1032	S. 61 16 W.	.38	S. 30 W.	.11½
		Autumn	3634½	3332	674½	2008½	5896½	7427	4969	4793	625	S. 70 57 W.	.29	South.	.01
		Winter	3842½	4468	659½	1862	5228	6838	4603	5211	521	S. 85 3 W.	.24	N. 21 E.	.08
		The year	14153½	14349½	2737½	7732½	22261	31136	19471½	19479	2771½	S. 72 27 W.	.29		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.39	6.04	5.95	6.72	6.27
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.84	2.61	2.07	1.75	2.06
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.08	3.00	2.62	2.39	2.50
Excess of the latter over the former	+.24	+.39	+.55	+.64	+.44

[2] Computed from the resultants for the seasons.

(Nos. 210 to 227.) **Eastern New York.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Albany,	Academy and H. M. Paine, M.D.,	24	11	1826 to 1849 inclusive, 1865 and 1866.
Argyle,	....	0	6	1864.
Cambridge,	Cambridge Washington Academy,	14	0	1827 to 1839 inclusive, and 1841.
Canajoharie,	Academy,	2	0	1833 and 1835.
Chatham,	Cornelius and C. T. Chase,	0	8	1843, 1844 and 1854.
Cherry Valley,	Academy,	15	0	1827 to 1836, and 1841 to 1845, both inclusive.
Delhi,	Delaware Academy,	2	0	1828 and 1837.
Fairfield,	Academy,	19	0	1827, 1828, 1831, 1832, 1833, 1835 to 1845 inclusive, 1847, 1848 and 1849.
Fort Ann,	P. M. McMore,	1	9	1863 to 1866 inclusive.
Fort Edward,	Prof. Solomon Sias,	0	2	1857.
Germantown,	Rev. Sanford W. Roe,	2	0	1866, 1867 and 1868.
Granville,	Academy,	14	0	1835 to 1849, except 1837.
Greenville,	E. B. Wheeler,	1	0	1826.
Hudson,	Academy and G. P. Hackenberg,	17	7	1827 to 1835, and 1841 to 1849 (both inclusive except 1830) and 1869.
Johnstown,	Academy,	14	0	1828 to 1838, and 1841 to 1845, both inclusive except 1830 and 1833.
Kinderhook,	Academy,	17	0	1830 to 1836 inclusive.
Lansingburg,	Academy,	20	0	1826 to 1846 inclusive except 1838.
Minaville,	D. S. and J. W. Bussing,	2	6	1867, 1868 and 1869
Nassau,	Mr. Bullard,	1	0	1843, 1850 and 1851.
North Volney,	J. M. Partrick.	0	11	1868 and 1869.
Salem,	Washington Academy,	10	0	1828, 1829, 1830, 1838, 1840, 1841 and 1843 to 1847 inclusive.
Saratoga,	Walter H. Riker,	2	7	1856 to 1859 inclusive.
Schenectady,	Academy,	3	6	1829, 1836, 1837 and 1864.
Sloansville,	G. W. Potter,	0	5	1868 and 1869.
South Hartford,	Grenville M. Ingalsbee,	5	10	1863 to 1869 inclusive.
Spencertown,	A. W. Morehouse and others,[1]	3	11	1854 to 1857 inclusive, and 1861.
Troy,	Mr. Cook and others,[2]	7	7	1843, 1854 and 1860 to 1868 inclusive.
Waterford,	John C. House,	3	2	1857, 1861, 1862 and 1863.
Watervliet Arsenal,	Post Surgeon,	18	0	1831 to 1845 and 1851 to 1854, both inclusive except 1833.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
210. Delhi.	The year	92	61	48	46	269	407	326	213	...	S. 80° 35′ W.	.43	....	...	731
211. Fairfield.	January	15	23	229	179	19	31	264	418	...	N. 52 15 W.	.18	....	...	589
	February	14	17	231	158	15	24	230	387	...	N. 47 22 W.	.20	....	...	538
	March	8	18	246	176	23	23	267	417	...	N. 68 49 W.	.18	....	...	589
	April	7	9	260	123	14	44	324	359	...	N. 62 9 W.	.25	....	...	570
	May	9	7	238	143	28	39	381	333	...	N. 88 14 W.	.26	....	...	589
	June	8	10	152	140	27	80	409	314	...	N. 82 53 W.	.38	....	...	570
	July	10	12	106	177	38	98	355	382	...	N. 82 55 W.	.40	....	...	589
	August	13	4	142	246	37	103	339	294	...	S. 78 44 W.	.27	....	...	589
	September	8	14	166	212	28	63	334	315	...	S. 87 59 W.	.22	....	...	570
	October	11	10	199	218	38	47	295	360	...	N. 77 52 W.	.21	....	...	589
	November	16	8	168	207	18	33	276	414	...	N. 65 6 W.	.26	....	...	570
	December	4	19	156	227	13	48	299	412	...	N. 71 6 W.	.27	....	...	589
	Spring	24	34	744	442	65	106	972	1109	...	N. 63 9 W.	.24	....	...	1748
	Summer	31	26	400	563	102	281	1103	990	...	N. 87 36 W.	.34	....	...	1748
	Autumn	35	32	533	637	84	143	905	1089	...	N. 75 59 W.	.23	....	...	1729
	Winter	33	59	616	564	47	103	793	1217	...	N. 58 7 W.	.23	....	...	1716
	The year	123	151	2293	2206	298	633	3773	4405	...	N. 72 53 W.	.26	....	...	6941

[1] Irving Magee and Levi S. Packard. [2] John W. Heimstreet, Prof. E. A. H. Allen and Wm. L. Haskin.

(Nos. 212 to 216.) **Eastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
	January	47	70	51	20	114	226	328	74	...	S. 66° 06′ W.	.47	....	...	465
	February	52	48	36	20	106	149	337	100	...	S. 80 37 W.	.48	....	...	424
	March	34	65	67	24	124	142	367	107	...	S. 77 51 W.	.47	....	...	465
	April	40	87	109	37	111	111	284	121	...	S. 83 20 W.	.28	....	...	450
	May	38	78	61	32	121	158	298	144	...	S. 80 52 W.	.42	....	...	465
	June	26	57	64	35	122	181	297	118	...	S. 75 51 W.	.43	....	...	450
	July	33	28	24	35	87	255	311	157	...	S. 76 30 W.	.61	....	...	465
212. Cherry Valley.	August	37	53	33	25	122	195	308	157	...	S. 78 50 W.	.53	....	...	465
	September	49	48	36	30	136	189	272	140	...	S. 75 15 W.	.46	....	...	450
	October	50	37	33	32	175	187	262	154	...	S. 71 3 W.	.49	....	...	465
	November	44	61	48	20	115	206	279	127	...	S. 76 33 W.	.47	....	...	450
	December	45	75	56	11	93	200	318	132	...	S. 83 28 W.	.49	....	...	465
	Spring	112	230	237	93	356	411	949	372	...	S. 80 26 W.	.38	....	...	1380
	Summer	96	138	121	95	331	631	916	432	...	S. 75 58 W.	.52	....	...	1380
	Autumn	143	146	117	82	426	582	813	421	...	S. 74 13 W.	.47	....	...	1365
	Winter	144	193	143	51	313	575	983	306	...	S. 78 40 W.	.48	....	...	1354
	The year	495	707	618	321	1426	2199	3661	1531	...	S. 77 7 W.	.47	....	...	5479
	January	1	0	14	23	6	7	41	30	...	S. 83 15 W.	.36	....	...	93
	February	1	0	7	18	2	3	41	40	...	N. 79 59 W.	.43	....	...	84
	March	1	0	16	23	10	2	37	37	...	S. 87 21 W.	.12	....	...	93
	April	0	1	40	15	2	2	28	32	...	S. 4 39 W.	.08	....	...	90
	May	2	0	29	23	0	5	28	37	...	N. 56 11 W.	.12	....	...	93
	June	0	0	6	29	3	8	19	55	...	N. 75 1 W.	.32	....	...	90
	July	0	0	5	14	5	9	50	41	...	N. 86 46 W.	.55	....	...	93
213. Canajoharie.	August	2	0	8	25	4	5	35	45	...	N. 81 36 W.	.38	....	...	93
	September	0	0	12	17	1	11	48	31	...	N. 88 8 W.	.29	....	...	90
	October	1	0	17	36	4	5	26	35	...	S. 53 30 W.	.14	....	...	93
	November	0	0	17	29	2	9	21	42	...	N. 87 32 W.	.17	....	...	90
	December	0	0	11	40	1	6	27	39	...	S. 71 57 W.	.17	....	...	93
	Spring	3	1	83	61	12	9	93	106	...	N. 70 8 W.	.13	....	...	276
	Summer	2	0	19	68	12	22	104	141	...	N. 80 17 W.	.42	....	...	276
	Autumn	1	0	46	82	7	25	95	108	...	S. 86 26 W.	.24	....	...	273
	Winter	2	0	34	81	9	16	109	109	...	N. 89 13 W.	.29	....	...	270
	The year	8	1	182	292	40	72	401	464	...	N. 84 16 W.	.27	....	...	1095
214. Greenville.	The year	32	136	52	465	40	78	92	565	...	N. 33 54 W	.08½	....	...	730
	January	3	125	151	30	9	56	446	48	...	N. 77 49 W.	.31	....	...	434
	February	0	90	154	13	2	44	458	31	...	N. 81 20 W.	.34	....	...	396
	March	3	81	183	27	4	58	478	34	...	N. 85 53 W.	.34	....	...	434
	April	8	73	203	45	5	64	396	46	...	N. 88 48 W.	.22	....	...	420
	May	12	57	174	63	15	78	414	55	...	S. 84 32 W.	.30	....	...	434
	June	1	52	139	63	10	82	456	37	...	S. 80 41 W.	.38	....	...	420
	July	2	27	74	40	10	110	510	95	...	S. 85 26 W.	.66	....	...	434
215. Johnstown.	August	7	50	67	84	24	97	474	65	...	S. 83 11 W.	.57	....	...	434
	September	4	30	129	76	20	68	426	87	...	S. 84 56 W.	.40	....	...	420
	October	16	64	110	51	11	79	430	107	...	N. 84 43 W.	.44	....	...	434
	November	5	68	132	24	10	42	479	80	...	N. 81 53 W.	.44	....	...	420
	December	4	89	158	14	3	81	448	71	...	N. 81 43 W.	.39	....	...	434
	Spring	23	211	560	135	24	200	1288	135	...	N. 89 28 W.	.28	....	...	1288
	Summer	10	129	280	187	44	289	1440	197	...	S. 83 45 W.	.50	....	...	1288
	Autumn	25	162	371	151	41	189	1335	274	...	N. 87 14 W.	.43	....	...	1274
	Winter	7	304	463	57	14	181	1352	150	...	N. 80 28 W.	.35	....	...	1264
	The year	65	806	1674	530	123	859	5415	756	...	N. 89 4 W.	.39	....	...	5114
	January	11	6	1	8	25	7	26	102	...	N. 60 42 W.	.59	....	...	93
	February	9	16	2	24	5	5	41	68	...	N. 55 4 W.	.42	....	...	85
	March	9	6	1	25	37	9	44	55	...	S. 82 23 W.	.37	....	...	93
	April	7	3	1	20	33	4	43	69	...	N. 89 28 W.	.43	....	...	90
	May	10	15	14	38	24	5	46	34	...	S. 66 27 W.	.13	....	...	93
	June	6	16	24	44	15	10	30	35	...	S. 21 0 E.	.06	....	...	90
	July	8	7	11	28	25	13	64	30	...	S. 71 16 W.	.34	....	...	93
216. Schenectady.	August	8	8	11	24	28	13	73	21	...	S. 65 54 W.	.35	....	...	93
	September	6	4	10	44	28	5	60	23	...	S. 43 41 W.	.21	....	...	90
	October	1	17	2	41	17	5	55	48	...	S. 87 5 W.	.24	....	...	93
	November	15	7	7	27	23	8	42	51	...	N 81 30 W.	.29	....	...	90
	December	10	12	1	20	21	12	33	77	...	N. 67 55 W.	43	....	...	93
	Spring	26	24	16	83	94	18	133	158	...	S. 86 18 W.	.20	....	...	276
	Summer	22	31	46	96	68	36	167	86	...	S. 64 16 W.	.24	....	...	276
	Autumn	22	28	19	112	68	18	157	122	...	S. 77 0 W.	.16	....	...	273
	Winter	30	34	4	52	51	24	100	247	...	N. 61 20 W.	.47	....	...	271
	The year	100	117	85	343	281	96	557	613	...	N. 87 17 W.	.30	....	...	1096

(Nos. 217 to 220.) **Eastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
217. Kingston.	January	72	310	18	74	74	293	79	320	N. 50° 44′ W.	.24	....	...	620
	February	55	344	36	83	66	192	104	248	N. 18 7 W.	.18	....	...	564
	March	64	311	30	77	93	267	123	275	N. 54 6 W.	.21	....	...	620
	April	56	297	45	82	95	253	86	286	N. 47 19 W.	.17	....	...	600
	May	62	304	52	151	101	277	99	194	S. 84 53 W.	.05	....	...	620
	June	76	245	43	138	151	254	89	204	S. 66 15 W.	.09	....	...	600
	July	60	215	27	182	115	344	103	194	S. 44 52 W.	.20	....	...	620
	August	56	257	38	164	141	290	99	195	S. 51 6 W.	.11	....	...	620
	September	73	233	35	127	150	241	80	261	N. 85 24 W.	.12	....	...	600
	October	83	261	35	118	112	278	73	280	N. 65 40 W.	.15	....	...	620
	November	85	283	37	65	88	247	78	317	N. 43 27 W.	.23	....	...	600
	December	67	343	26	51	80	253	71	349	N. 36 23 W.	.27	....	...	620
	Spring	182	912	127	310	289	797	308	755	N. 55 6 W.	.14	....	...	1840
	Summer	192	717	108	484	407	888	291	593	S. 52 31 W.	.12	....	...	1840
	Autumn	241	777	107	310	350	766	231	858	N. 60 23 W.	.15	....	...	1820
	Winter	194	997	80	208	220	738	254	917	N. 36 47 W.	.22	....	...	1804
	The year	809	3403	422	1312	1266	3189	1084	3[illegible]	N. 61 3 W.	.14	....	...	7304
218. Hudson.	January	237	53	36	145	225	37	62	259	N. 42 16 W.	.14	....	...	527
	February	250	80	32	146	180	17	43	212	N. 4 34 W.	.16	....	...	480
	March	227	60	24	195	207	38	52	250	N. 34 49 W.	.09	....	...	527
	April	227	76	25	185	209	48	44	206	N. 7 35 E.	.07	....	...	510
	May	218	42	26	200	283	27	57	201	S. 29 53 W.	.08	....	...	527
	June	218	19	16	141	349	41	53	183	S. 35 7 W.	.14	....	...	510
	July	223	31	20	141	366	36	72	165	S. 29 16 W.	.14	....	...	527
	August	224	51	31	190	345	29	56	128	S. 13 14 E.	.15	....	...	527
	September	268	53	21	160	270	36	47	165	N. 52 36 W.	.02	....	...	510
	October	250	78	21	154	279	37	42	192	N. 53 52 W.	.03	....	...	527
	November	255	54	27	132	217	40	60	236	N. 38 30 W.	.15	....	...	510
	December	241	81	19	118	231	59	80	225	N. 56 53 W.	.18	....	...	527
	Spring	672	178	75	580	699	113	153	657	N. 49 41 W.	.03	....	...	1564
	Summer	665	101	67	472	1060	106	181	476	S. 16 55 W.	.13	....	...	1564
	Autumn	773	185	69	446	766	113	149	593	N. 39 25 W.	.06	....	...	1547
	Winter	728	214	87	409	636	113	185	696	N. 32 4 W.	.14	....	...	1534
	The year	2838	678	298	1907	3161	445	668	2422	N. 70 7 W.	.048	....	...	6209
219. Albany.	January	127.5	52.3	9.2	30.3	203.9	52.8	85.2	182.8					
	February	97.7	64.1	9.8	22.2	170.2	47.8	70.7	195.5					
	March	122.3	47.4	12.3	28.4	209.3	37.8	97.5	189.0					
	April	109.7	55.0	13.5	23.5	219.7	46.3	65.6	186.7					
	May	86.9	40.3	19.7	50.7	273.3	50.5	72.8	149.8					
	June	67.8	26.2	16.4	51.3	289.5	52.5	52.0	164.3					
	July	84.5	37.7	17.3	64.5	289.2	46.3	57.7	146.8					
	August	85.8	56.2	20.7	55.5	243.7	68.1	65.7	148.3					
	September	98.3	48.2	16.3	51.0	238.5	52.4	67.5	147.8					
	October	97.8	43.2	16.2	44.8	246.1	45.2	65.5	185.2					
	November	83.0	48.8	14.0	26.4	184.8	64.0	90.7	208.3					
	December	118.0	50.0	6.7	18.7	206.3	50.0	81.8	212.5					
	Spring	318.9	142.7	45.5	102.6	702.3	134.6	235.9	525.5	S. 76 33 W.	.22	N. 18°E.	.01	
	Summer	238.1	120.1	54.4	171.3	822.4	166.9	175.4	459.4	S. 40 52 W.	.25	S. 22 E.	.14	
	Autumn	279.1	140.2	46.5	122.2	669.4	161.6	223.7	541.3	S. 77 19 W.	.23	N. 47 W.	.01	
	Winter	343.2	166.4	25.7	71.2	580.4	150.6	237.7	590.8	N. 76 2 W.	.27	N. 20 W.	.13	
	The year	1179.3	569.4	172.1	467.3	2774.5	613.7	872.7	2117.0	S. 76 23 W.	.22			
220. Lansingburg.	January	163	60	2	74	234	155	253	299	N. 88 43 W.	.40	....	...	620
	February	142	25	1	71	236	120	303	232	S. 80 38 W.	.41	....	...	565
	March	169	33	1	79	297	104	307	250	S. 74 11 W.	.41	....	...	620
	April	203	48	7	84	324	57	229	249	S. 88 1 W.	.28	....	...	600
	May	154	38	19	123	354	114	224	214	S. 61 25 W.	.31	....	...	620
	June	104	35	22	114	350	150	246	179	S. 52 31 W.	.39	....	...	600
	July	127	16	12	77	393	178	286	151	S. 53 28 W.	.46	....	...	620
	August	180	44	17	93	359	150	252	146	S. 58 13 W.	.33	....	...	620
	September	159	34	11	99	351	122	206	218	S. 63 23 W.	.32	....	...	600
	October	192	34	11	81	333	151	238	200	S. 65 28 W.	.36	....	...	620
	November	155	42	3	56	280	102	337	225	S. 81 30 W.	.42	....	...	600
	December	242	40	4	45	248	132	273	256	N. 81 10 W.	.41	....	...	620
	Spring	526	119	27	286	975	275	760	713	S. 77 20 W.	.32	....	...	1840
	Summer	411	95	51	284	1102	478	784	476	S. 54 4 W.	.38	....	...	1840
	Autumn	506	110	25	236	964	375	781	643	S. 74 0 W.	.35	....	...	1820
	Winter	547	125	7	190	718	407	829	787	N. 87 57 W.	.40	....	...	1805
	The year	1990	449	110	996	3759	1535	3154	2619	S. 74 23 W.	.35	....	...	7305

(Nos. 221 to 224.) **Eastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
221. Watervleit	Spring	396	108	48	273	1070	377	1193	813	...	S. 75° 17′ W.	.40½			
	Summer	314	98	51	238	1463	480	1008	471	...	S. 47 28 W.	.46			
	Autumn	475	102	30	197	1272	382	1089	603	...	S. 65 22 W.	.41			
	Winter	532	64	19	108	1033	410	1297	999	...	S. 86 56 W.	.48½			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 69 10 W.	.42½			
222. Kinderhook.	January	425	26	7	24	333	30	37	172	...	N. 54 53 W.	.23	....	...	527
	February	411	21	9	25	277	24	22	171	...	N. 26 46 W.	.26	....	...	480
	March	412	13	6	44	345	31	20	183	...	N. 39 58 W.	.19	....	...	527
	April	387	15	20	51	363	20	19	145	...	N. 38 46 W.	.11	....	...	510
	May	374	20	15	58	429	36	19	103	...	S. 54 17 W.	.06	....	...	527
	June	346	16	26	41	454	30	15	92	...	S. 22 43 W.	09	....	...	510
	July	365	11	8	20	446	57	23	124	...	S. 64 37 W.	.09	....	...	527
	August	421	5	8	31	457	37	14	81	...	S. 70 46 W.	07	....	...	527
	September	412	9	9	19	437	32	14	88	...	N. 84 1 W.	.07	....	...	510
	October	469	8	8	22	415	19	25	88	...	N. 37 48 W.	11	....	...	527
	November	453	19	14	17	317	32	21	147	...	N. 26 16 W.	.24	....	...	510
	December	502	22	18	25	311	38	18	120	...	N. 17 45 W.	.25	....	...	527
	Spring	1173	48	41	153	1137	87	58	431	...	N. 49 38 W.	.10	....	...	1564
	Summer	1132	32	42	92	1357	124	52	297	...	N. 70 2 W.	.07	....	...	1564
	Autumn	1334	36	31	58	1169	83	60	323	...	N. 38 2 W.	.13	....	...	1547
	Winter	1338	69	34	74	921	92	77	463	...	N. 26 20 W.	.24	....	...	1534
	The year	4977	185	148	377	4584	386	247	1514	...	N 44 44 W.	.12	....	...	6209
223. Salem.	January	133	77	4	41	82	174	56	53	...	N. 87 31 W.	.22	....	...	310
	February	95	88	4	6	66	202	40	65	...	S. 86 53 W.	.26	....	...	283
	March	113	119	3	8	118	136	42	81	...	N. 71 22 W.	.18	....	...	310
	April	82	114	10	18	113	166	30	67	...	S. 70 7 W.	.16	....	...	300
	May	96	77	14	24	130	201	38	40	...	S. 48 11 W.	.27	....	...	310
	June	87	51	4	17	100	255	47	39	...	S. 54 39 W.	.41	....	...	300
	July	102	54	2	11	103	289	35	24	...	S. 52 50 W.	.43	....	...	310
	August	77	42	0	16	90	272	57	66	...	S. 61 12 W.	.48	....	...	310
	September	118	73	2	10	97	195	52	53	...	S. 68 1 W.	.30	....	...	300
	October	140	57	0	12	108	185	62	56	...	S. 81 30 W.	.31	....	...	310
	November	106	49	3	5	73	212	43	109	...	S. 87 45 W.	.38	....	...	300
	December	140	66	5	24	102	189	27	67	...	S. 49 6 W.	.27	....	...	310
	Spring	291	310	27	50	361	503	110	188	...	S. 71 3 W.	.18	....	...	920
	Summer	266	147	6	88	293	816	139	129	...	S. 56 34 W.	.44	....	...	920
	Autumn	364	179	5	27	278	592	157	218	...	S. 83 1 W.	.32	....	...	910
	Winter	368	231	13	71	250	565	123	185	...	S. 84 58 W.	.24	....	...	903
	The year	1289	867	51	192	1182	2476	529	720	...	S. 71 43 W.	.29	....	...	3653
224. Cambridge.	January	224	25	4	8	203	165	103	136	...	N. 87 31 W.	.34	....	...	434
	February	218	24	3	10	153	160	110	112	...	N. 81 18 W.	.32	....	...	395
	March	237	16	2	7	184	174	97	152	...	N. 82 12 W.	.37	....	...	434
	April	231	24	3	27	158	156	124	117	...	N. 68 41 W.	.16	....	...	420
	May	161	29	12	21	241	170	110	124	...	S. 68 28 W.	.41	....	...	434
	June	146	22	10	21	187	181	142	131	...	S. 76 50 W.	.39	....	...	420
	July	136	23	3	17	193	220	153	123	...	S. 71 25 W.	.45	....	...	434
	August	147	25	10	16	225	199	133	113	...	S. 71 35 W.	.39	....	...	434
	September	165	29	5	19	222	157	121	122	...	S. 75 0 W.	.34	....	...	420
	October	175	38	1	38	225	134	103	154	...	S. 82 59 W.	.30	....	...	434
	November	216	30	3	12	182	140	66	191	...	N. 71 38 W.	.33	....	...	420
	December	233	34	1	11	209	141	105	134	...	N. 82 22 W.	.32	....	...	434
	Spring	629	69	17	55	583	500	331	393	...	S. 88 41 W.	.34	....	...	1288
	Summer	429	70	23	54	605	600	428	367	...	S. 71 47 W.	.41	....	...	1288
	Autumn	556	97	9	69	629	431	290	467	...	S. 88 1 W.	.32	....	...	1274
	Winter	675	83	8	29	565	466	318	382	...	S. 88 32 W.	.33	....	...	1263
	The year	2289	319	57	207	2382	1997	1367	1609	...	S. 85 17 W.	.35	....	...	5113

[1] Computed from the resultants for the seasons.

(Nos. 225 to 227.) **Eastern New York.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
225. Granville.	January	361	29	4	32	149	188	51	54	...	N. 56° 43′ W.	.24	....	...	434
	February	280	37	17	55	169	160	35	39	...	N. 87 49 W.	.13	....	...	396
	March	329	35	8	47	167	199	37	46	...	N. 72 38 W.	.17	....	...	434
	April	276	34	5	23	177	214	46	65	...	N. 89 59 W.	.23	....	...	420
	May	307	34	14	22	182	244	34	31	...	S. 84 20 W.	.20	....	...	434
	June	221	17	9	28	265	239	33	28	...	S. 42 1 W.	.32	....	...	420
	July	222	17	1	14	318	254	23	19	...	S. 36 38 W.	.37	....	...	434
	August	209	19	2	25	298	268	20	27	...	S. 36 32 W.	.37	....	...	434
	September	237	25	5	33	238	234	27	41	...	S. 50 40 W.	.27	....	...	420
	October	302	18	0	27	212	238	21	50	...	S. 75 52 W.	.23	....	...	434
	November	356	24	4	24	171	189	28	44	...	N. 62 5 W.	.21	....	...	420
	December	341	18	10	32	178	184	69	36	...	N. 74 54 W.	.21	....	...	434
	Spring	912	103	27	92	526	657	117	142	...	N. 87 10 W.	.21	....	...	1288
	Summer	652	53	12	67	881	761	76	74	...	S. 38 7 W.	.37	....	...	1288
	Autumn	895	67	9	84	621	661	76	135	...	S. 78 8 W.	.21	....	...	1274
	Winter	982	84	31	119	496	532	155	129	...	S. 68 31 W.	.19	....	...	1264
	The year	3441	307	79	362	2524	2611	424	480	...	S. 72 57 W.	.20	....	...	5114
226. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observat'ns.	Spring	207	104	21	181	235	283	132	483	...	N. 82 33 W.	.263	N. 25° E.	.06	
	Summer	163	81	32	155	260	401	202	295	...	S. 65 38 W.	.325	S. 4 W.	.11	
	Autumn	251	76	24	86	293	361	116	284	...	S. 76 34 W.	.287	S. 8 E.	.04	
	Winter	243	134	23	148	276	309	193	595	...	N. 75 16 W.	.318	N. 10½ W.	.10	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 85 45 W.	.287			
No. of miles.	Spring	1293	696	86	1133	1653	1947	957	4021	...	N. 78 8 W.	.313	North	.11	
	Summer	664	231	76	792	1490	2165	911	1517	...	S. 58 14 W.	.386	S. 10 W.	.15	
	Autumn	1288	531	95	624	1774	2246	632	1680	...	S. 69 8 W.	.30	S. 25 E.	.06	
	Winter	1413	643	76	1536	2187	1767	1678	4454	...	N. 83 48 W.	.317	N. 3 W.	.09	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 82 51 W.	.305			
M'n vel. in miles p.h'r.	Spring	6.25	6.69	4.10	6.26	7.03	6.88	7.25	8.33						
	Summer	4.07	2.85	2.37	5.11	5.73	5.40	4.51	5.14						
	Autumn	5.13	6.99	3.96	7.26	6.05	6.22	5.45	5.93						
	Winter	5.81	4.80	3.30	10.38	7.92	5.72	8.69	7.49						
227. Aggregate number of observations at all stations. Surface winds.	Spring	7104	2346	2296	3055	9074	4825	8053	7719	753	S. 87 45 W.	.22	N. 71 E.	.05	
	Summer	5693	1780	1486	3151	11041	6732	8248	6019	635	S. 70 7 W.	.31	S. 20 W.	.05	
	Autumn	7134	2245	1726	3052	9434	5437	7724	7378	695	S. 82 28 W.	.25½	S. 54 E.	.04	
	Winter	7573	2528	1831	2501	7641	5237	8254	8666	724	N. 79 24 W.	.29	N. 17½ W.	.04	
	The year	27504	8899	7339	11759	37190	22231	32279	29782	2807	S. 85 18 W.	.26½			
Motion of clouds.	Spring	287	264	217	330	425	1215	996	1009	...	S. 80 18 W.	.41	S. 55 E.	.05	
	Summer	274	316	97	245	333	1327	1284	838	...	S. 81 33 W.	.49	S. 46 W.	.05	
	Autumn	326	396	136	260	332	1227	1058	1092	...	S. 89 51 W.	.43½	N. 27 E.	.04	
	Winter	249	225	143	162	387	872	1050	943	...	S. 88 42 W.	.48	N. 51 W.	.04	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 49 27 W.	.59			
2 preceding combined.	Spring	7391	2610	2513	3385	9499	6040	9049	8728	753	S. 86 36 W.	.25½	N. 48½ E.	.03½	
	Summer	5967	2096	1583	3396	11374	8059	9532	6857	635	S. 63 51 W.	.33	S. 8 W.	.11	
	Autumn	7460	2641	1862	3312	9766	6664	8782	8470	695	S. 83 39 W.	.27	N. 59 E.	.01½	
	Winter	7822	2753	1974	2663	8028	6109	9304	9609	724	N. 80 56 W.	.30	N. 12 W.	.08½	
	The year	28640	10100	7932	12756	38667	26872	36667	33664	2807	S. 82 42 W.	.28			

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.16	4.94	5.95	7.16	6.30
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.98	1.61	1.71	2.28	1.81
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.24	1.91	1.69	2.27	1.92
Excess of the latter over the former	+.26	+.30	—.02	—.01	+.11

[2] Computed from the resultants for the seasons.

(Nos. 228 to 243.) **Southeastern New York.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Amenia,	Alexander Winchell,	1	0	1849.
Beaver Brook,	C. S. Woodward,	1	0	1854.
Beverly,	Thomas B. Arden,	14	6	1854 to 1869 inclusive except 1860.
Blackwell's Island,	W. W. Sanger, M.D.,	2	0	1856 and 1857.
Bloomingdale,	O. W. Morris,	1	0	1846.
Central Park, N. Y. City,	Daniel Draper,	3	0	1870–1872.
Columbia College, "	Prof. Charles A. Joy,	4	9	1865 to 1869 inclusive.
Deaf and Dumb Institute, New York City,	O. W. Morris,	14	0	1844, 1846 to 1850, 1854, 1855, 1856 and 1861 to 1869 inclusive.
Fishkill,	William Harkness,	2	6	1853 to 1856 inclusive.
Fishkill Landing,	W. H. Denning,	6	9	1856, 1857 and 1861 to 1866 inclusive.
Fordham,	Rev. John Aubier and Prof. A. T. Monroe,	0	7	1861 and 1862.
Fort Columbus,	Post Surgeon,	35	2	1822 to 1859 inclusive except 1837 and 1838.
Fort Wood,	Post Surgeon,	5	0	1832, 1835, 1837 and 1838.
Glasco,	....	0	2	1869.
Goshen,	Farmers' Hall,	11	0	1835 and 1838 to 1849 inclusive except 1843 and 1848.
Kingston,	Academy,	20	4	1829 to 1843 and 1845 to 1849 both inclusive, and 1869.
Liberty,	John Felt,	0	4	1856.
Montgomery,	Academy,	13	0	1828 to 1838 inclusive, 1840 and 1842.
Mount Pleasant,	Academy,	12	0	1831 to 1844 inclusive except 1833 and 1836.
Morrisania,	J. S. Gorton and Joseph Zaepffel,	3	6	1856 to 1859 inclusive.
Newburg,	Academy and James H. Gardiner,	22	10	1828, 1829, 1832 to 1849 and 1864 to 1869 both inclusive except 1837 and 1841.
New York City,	Wm. C. Redfield and others,[1]	15	0	1833 to 1839 and 1854 to 1857 both inclusive.
New York, 92d Street,	....	1	10	1861, '62, '63, '68 and '69.
New York, 127th Street,	....	0	2	1869.
North Salem,	Academy and others,[2]	19	10	1829 to 1835 inclusive, 1838, 1840 to 1850 inclusive and 1856.
Nyack,	C. De la Verny,	0	5	1869.
Poughkeepsie,	Dutchess Academy, Prof. C. B. Waring,	16	0	1829 to 1836 and 1841 to 1847 both inclusive, and 1849.
Rhinebeck,	Mr. Platt,	0	1	1843.
Red Hook,	Academy,	12	0	1830 to 1842 inclusive except 1838.
St. Francis Xavier's College,	Rev. John M. Aubier,	2	3	1864 to 1867 inclusive.
Sing Sing,	C. F. Maurice,	1	0	1850.
Stapleton,	Spencer L. Hillier,	0	5	1867 and 1868.
Suffren,	James H. Warren,	0	1	1863.
Throg's Neck,	F. M. Rogers & Mrs. E. Morris,	1	8	1864, 1865 and 1866.
West Point,	Post Surgeon,	32	7	1827 to 1859 inclusive.
White Plains,	....	0	4	1833 (March, June, October and December).

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variab	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
228. Goshen.	January	27	138	12	11	34	207	158	95	...	N. 89° 6′ W.	.38	....	...	341
	February	28	155	10	5	23	177	159	63	...	N. 81 36 W.	.31	....	...	310
	March	21	179	25	23	44	176	127	88	...	S. 65 18 W.	.24	....	...	341
	April	36	121	29	34	65	172	117	86	...	N. 79 25 W.	.25	....	...	330
	May	18	93	68	29	89	193	125	67	...	S. 53 20 W.	.29	....	...	341
	June	21	76	25	34	111	224	118	51	...	S. 48 57 W.	.34	....	...	330
	July	24	98	15	33	81	279	100	52	...	S. 52 12 W.	.44	....	...	341
	August	10	101	44	43	97	223	100	64	...	S. 44 41 W.	.34	....	...	341
	September	34	133	24	35	72	161	136	65	...	S. 76 35 W.	.24	....	...	330
	October	23	132	22	30	60	200	140	75	...	S. 75 4 W.	.31	....	...	341
	November	22	156	20	17	33	165	150	97	...	N. 78 33 W.	.30	....	...	330
	December	18	163	6	2	17	170	212	94	...	N. 77 26 W.	.43	....	...	341
	Spring	75	393	122	86	198	541	369	241	...	S. 75 39 W.	.23	....	...	1012
	Summer	55	275	84	110	289	726	318	167	...	S. 49 13 W.	.39	....	...	1012
	Autumn	79	421	66	82	165	526	426	237	...	S. 83 52 W.	.27	....	...	1001
	Winter	73	456	28	18	74	554	529	252	...	N. 82 38 W.	.38	....	...	992
	The year	282	1545	300	296	726	2347	1642	897	...	S. 75 54 W.	.30	....	...	4017

[1] Mr. Fisher and J. S. Gibbons.

[2] John T. Jenkins and Mrs. M. J. Lobdell.

(Nos. 229 to 232.) **Southeastern New York.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
229. Newburg.	January	130	207	13	32	108	248	175	203	...	N. 69° 55′ W.	.31	....	...	558
	February	119	218	11	37	87	197	140	209	...	N. 54 34 W.	.28	....	...	510
	March	88	235	22	43	147	251	130	200	...	N. 55 13 W.	.26	....	...	558
	April	106	246	23	70	172	193	109	161	...	N. 72 17 W.	.11	....	...	540
	May	87	220	34	95	231	216	126	107	...	S. 36 17 W.	.15	....	...	558
	June	103	139	22	87	198	306	99	126	...	S. 50 13 W.	.27	....	...	540
	July	55	148	31	99	222	263	127	109	...	S. 37 17 W.	.31	....	...	558
	August	85	164	24	128	195	296	108	116	...	S. 38 37 W.	.26	....	...	558
	September	113	223	36	58	162	245	127	116	...	S. 81 21 W.	.14	....	...	540
	October	98	200	20	72	129	257	161	179	...	N. 89 31 W.	.24	....	...	558
	November	82	215	31	55	64	268	196	169	...	N. 82 9 W.	.24	....	...	540
	December	162	247	9	29	78	239	167	185	...	N. 52 9 W.	.31	....	...	558
	Spring	281	701	79	208	550	660	365	468	...	S. 82 44 W.	.14	....	...	1656
	Summer	243	451	77	314	615	865	334	351	...	S. 42 3 W.	.26	....	...	1656
	Autumn	293	638	87	185	355	770	484	464	...	N. 86 31 W.	.21	....	...	1638
	Winter	411	672	33	98	273	684	482	597	...	N. 59 14 W.	.28	....	...	1626
	The year	1228	2462	276	805	1793	2979	1665	1880	...	S. 86 7 W.	.20	....	...	6576
230. Bloomingdale.	The year	14	71	10	33	8	73	31	65	48	N. 58 52 W.?	.15	....	...	335
231. Fort Columbus.[1]	Spring	393	1287	406	1016	579	1149	664	1986	...	N. 54 47 W.	.14			
	Summer	308	977	387	1011	835	1612	771	1295	...	S. 53 9 W.	.18			
	Autumn	553	1192	468	700	498	1296	953	1876	...	N. 59 40 W.	.21			
	Winter	486	1300	388	398	267	1116	1013	2451	...	N. 47 14 W.	.36			
	The year	1740	4756	1649	3125	2179	5173	3401	7608	...	N. 64 58 W.	.19½			

232. New York City, 1833 to 1839.[2]		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for 1838 and 1839.	Total for the 7 years.
Surface winds.	N. E. quarter, including north	67	58½	99	67	51½	42½	21½	64	52½	55	61	66	705½	216
	S. E. quarter, including east	14	16½	33	37½	51	75	38	46½	39½	29	34	12	426	127
	S. W. quarter, including south	149	73	74	92	128	120	152½	103½	120	70½	81½	85½	1249	382
	N. W. quarter, including west	74½	110½	90	88½	59½	57	66½	85½	72	62	114½	129	1009½	275
Motion of clouds.	N. E. quarter, including north	5	4	11	16	2	7	6	21	12	12	5	20	121	53
	S. E. quarter, including east	20	1	1	17	9	5	0	6	4	14	0	1	78	24
	S. W. quarter, including south	154	53	108	60	102	125	81	93	145	99	130	112	1262	565
	N. W. quarter, including west	56	92	85	122	124	110	147	98	25	78	77	70	1084	358

[1] During the years 1837 and 1838 the observations were made at Fort Wood, on Bedloe's Island, some two miles distant.

[2] Observed by William C. Redfield. The monthly results are for the years 1838 and 1839 only.

(Nos. 233 to 236.) **Southeastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
233. New York City, 1831 to 1840 (Fisher).[1]	January	0.80	5.85	.60	1.20	.75	9.10	2.10	10.60	N. 66° 58′ W.	.37	N. 31° W.	.27	310
	February	0.60	6.90	.80	1.40	.40	8.30	1.20	8.70	N. 56 17 W.	.24	N. 5 W.	.23	283
	March	0.90	5.75	.95	2.25	3.20	9.10	1.80	7.05	S. 77 39 W.	.22	S. 4 W.	.03	310
	April	0.55	5.95	.50	2.75	2.60	10.40	1.45	5.80	S. 59 51 W.	.29	S. 37½ W.	.08	300
	May	0.70	5.15	.65	4.90	3.90	7.60	3.80	4.30	S. 39 46 W.	.25	S. 20 E.	.13	310
	June	1.60	3.80	.20	2.30	4.60	13.50	3.90	.10	S. 38 16 W.	.48	S. 20 W.	.32	300
	July	1.00	4.30	.20	5.70	3.80	10.90	3.70	1.40	S. 26 0 W.	.39	S. 3 E.	.28	310
	August	0.80	5.00	.10	7.20	2.40	10.10	2.20	3.20	S. 19 43 W.	.28	S. 23½ E.	.22	310
	September	1.30	6.75	1.50	4.30	3.10	9.15	.65	3.25	S. 1 25 W.	.14	S. 70½ E.	.19	300
	October	2.00	6.10	.40	3.35	2.25	8.10	3.40	5.40	S. 87 54 W.	.19	N. 3 E.	.08	310
	November	1.40	5.90	.40	.20	3 35	9.75	2.40	6.60	S. 89 5 W.	.31	N. 60 W.	.15	300
	December	1.60	9.20	1.00	1.20	.90	7.10	4.90	5.10	N. 45 44 W.	.23	N. 5 E.	.24	310
	The year	13.25	70.65	7.30	36.75	31.25	113.10	31.50	61.50	S. 66 56 W.	.21	....	...	3653
234. New York City, Deaf and Dumb Institute.[2]	January	6	51	3	26	3	53	44	124	N. 57 36 W.	.42	....	...	155
	February	13	59	0	9	3	44	58	98	N. 52 52 W.	.45	....	...	142
	March	18	65	7	31	6	31	51	101	N. 74 19 W.	.40	....	...	155
	April	17	54	13	48	10	42	51	65	N. 56 29 W.	.16	....	...	150
	May	11	79	4	72	13	50	40	41	S. 62 4 E.	.03	....	...	155
	June	7	52	5	50	14	55	77	40	S. 76 24 W.	.23	....	...	150
	July	11	60	8	59	16	60	49	47	S. 67 26 W.	.12	....	...	155
	August	7	51	12	59	9	44	49	59	N. 84 50 W.	.11	....	...	155
	September	20	51	3	44	15	44	53	70	N. 65 57 W.	.23	....	...	150
	October	6	62	5	37	14	48	58	80	N. 66 17 W.	.27	....	...	155
	November	15	64	2	36	3	42	67	71	N. 53 49 W.	.33	....	...	150
	December	5	80	2	13	2	38	79	91	N. 49 24 W.	.46	....	...	155
	Spring	46	198	24	151	29	123	142	207	N. 43 39 W.	.16	....	...	460
	Summer	25	163	25	168	39	159	175	146	S. 78 31 W.	.15	....	...	460
	Autumn	41	177	10	117	32	134	178	221	N. 61 51 W.	.27	....	...	455
	Winter	24	190	5	48	8	135	181	313	N. 53 15 W.	.44	....	...	452
	The year	136	728	64	484	108	551	676	887	N. 62 0 W.	.24	....	...	1827
235. Montgomery.	January	150	58	15	12	94	129	203	145	N. 74 0 W.	.44	....	...	403
	February	81	87	14	18	69	130	153	184	N. 70 56 W.	.39	....	...	368
	March	84	113	20	29	126	130	176	128	S. 87 41 W.	.33	....	...	403
	April	98	111	32	31	106	98	139	135	N. 68 46 W.	.27	....	...	390
	May	77	113	35	45	134	132	132	138	S. 88 27 W.	.26	....	...	403
	June	54	100	23	67	195	77	145	119	S. 58 14 W.	.21	....	...	390
	July	35	45	28	57	180	141	204	116	S. 60 28 W.	.43	....	...	403
	August	64	64	32	78	150	129	197	92	S. 61 17 W.	.32	....	...	403
	September	79	71	24	52	108	115	177	154	N. 87 20 W.	.33	....	...	390
	October	73	100	20	34	138	121	193	127	S. 86 43 W.	.32	....	...	403
	November	105	91	16	15	64	90	234	165	N. 60 0 W.	.48	....	...	390
	December	113	57	25	12	91	107	209	192	N. 71 44 W.	.46	....	...	403
	Spring	259	337	87	105	366	360	477	401	N. 82 2 W.	.26	....	...	1196
	Summer	153	209	83	292	525	347	546	327	S. 59 34 W.	.32	....	...	1196
	Autumn	257	262	60	101	310	326	604	446	N. 80 5 W.	.36	....	...	1183
	Winter	344	202	54	42	254	366	565	521	N. 71 56 W.	.44	....	...	1174
	The year	1013	1010	284	450	1455	1399	2192	1695	N. 59 7 W.	.38	....	...	4749
236. Poughkeepsie.	January	215	115	16	143	136	150	87	130	N. 53 62 W.	.10	....	...	496
	February	206	95	26	123	97	116	83	156	N. 38 56 W.	.16	....	...	451
	March	196	100	24	172	119	150	87	144	N. 31 44 W.	.16	....	...	496
	April	176	128	22	137	120	165	57	155	S. 46 45 W.	.10	....	...	480
	May	163	111	33	199	191	130	44	121	S. 15 53 W.	.10	....	...	496
	June	127	116	13	190	227	146	63	78	S. 18 41 W.	.21	....	...	480
	July	161	91	17	167	221	195	48	92	S. 12 59 W.	.20	....	...	496
	August	178	93	13	153	196	209	45	105	S. 31 12 W.	.16	....	...	496
	September	205	93	16	153	158	156	71	108	S. 87 28 W.	.07	....	...	480
	October	175	107	26	173	156	161	75	119	S. 41 39 W.	.05	....	...	496
	November	206	128	14	132	119	187	87	87	N. 89 23 W.	.07	....	...	480
	December	222	119	18	123	117	163	98	132	N. 55 36 W.	.15	....	...	496
	Spring	535	339	79	508	430	445	188	420	S. 76 5 W.	.04	....	...	1472
	Summer	466	300	43	510	644	550	156	275	S. 13 21 W.	.19	....	...	1472
	Autumn	586	328	56	458	433	504	233	314	S. 69 51 W.	.07	....	...	1456
	Winter	643	329	60	389	350	429	268	418	N. 50 57 W.	.13	....	...	1443
	The year	2230	1296	238	1865	1857	1928	845	1427	S. 62 51 W.	.07	....	...	5842

[1] The resultant for 19 years, 1822 to 1840, is S. 75° 26′ W. .20.
[2] For the years 1844, 1846, 1848, 1849 and 1850 only.

(Nos. 237 to 241(*a*).) **Southeastern New York.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
237. West Point.	Spring	1591	408	132	868	1787	553	457	1956	...	N. 68° 32′ W.	.16½			
	Summer	1432	335	161	854	2519	820	447	1384	...	S. 43 34 W.	.18			
	Autumn	1914	373	204	664	1553	724	544	1810	...	N. 56 34 W.	.21½			
	Winter	1755	320	101	535	1221	657	586	2611	...	N. 51 10 W.	.36			
	The year	6692	1436	598	2921	7080	2754	2034	7761	...	N. 70 3 W.	.20			
238. Redhook.	January	230	83	28	37	286	16	23	41	...	S. 89 15 E.	.07	....	...	372
	February	202	62	23	26	253	27	35	48	...	S. 17 27 W.	.10	....	...	339
	March	213	56	15	36	301	26	41	56	...	N. 5 41 W.	.26	....	...	372
	April	236	53	30	30	249	35	41	46	...	N. 41 6 W.	.02	....	...	360
	May	171	57	25	64	266	42	49	70	...	S. 12 22 W.	.11	....	...	372
	June	160	60	74	55	288	31	20	32	...	S. 30 51 E.	.20	....	...	360
	July	162	45	40	77	336	41	21	22	...	S. 16 7 E.	.30	....	...	372
	August	192	61	54	60	299	22	14	42	...	S. 41 6 E.	.17	....	...	372
	September	181	47	38	92	269	27	38	28	...	N. 39 10 E.	.10	....	...	360
	October	253	61	30	58	269	16	30	27	...	S. 29 15 E.	.08	....	...	372
	November	306	48	9	40	203	19	35	60	...	N. 8 8 W.	.19	....	...	360
	December	277	65	35	36	205	35	33	58	...	N. 35 54 W.	.21	....	...	372
	Spring	620	166	70	130	816	103	131	172	...	S. 69 14 W.	.02	....	...	1104
	Summer	514	166	168	192	923	94	55	96	...	S. 28 33 E.	.22	....	...	1104
	Autumn	740	156	77	190	741	62	103	115	...	N. 82 26 E.	.04	....	...	1092
	Winter	709	210	86	99	744	78	91	147	...	N. 30 31 E.	.05	....	...	1083
	The year	2583	698	401	611	3224	337	380	530	...	S. 36 59 E.	.06	....	...	4383
239. Mount Pleasant.	January	123	67	7	33	101	90	56	267	...	N. 53 26 W.	.38	....	...	372
	February	110	77	6	38	130	64	36	217	...	N. 51 55 W.	.26	....	...	339
	March	119	70	17	46	171	74	40	207	...	N. 66 35 W.	.21	....	...	372
	April	88	69	23	79	141	78	37	205	...	N. 74 42 W.	.16	....	...	360
	May	70	67	30	93	199	89	26	170	...	S. 36 5 W.	.15	....	...	372
	June	86	38	29	95	226	108	18	120	...	S. 24 29 W.	.26	....	...	360
	July	84	38	13	75	230	128	35	141	...	S. 39 9 W.	.29	....	...	372
	August	78	54	22	113	205	99	30	143	...	S. 27 32 W.	.44	....	...	372
	September	143	80	20	55	126	132	29	135	...	N. 70 19 W.	.15	....	...	360
	October	98	67	8	85	122	115	27	222	...	N. 75 55 W.	.22	....	...	372
	November	123	95	9	39	79	85	47	243	...	N. 41 51 W.	.36	....	...	360
	December	110	62	13	53	59	97	50	300	...	N. 67 5 W.	.35	....	...	372
	Spring	277	206	70	218	511	241	103	582	...	S. 89 45 W.	.14	....	...	1104
	Summer	248	130	64	283	661	335	83	404	...	S. 27 51 W.	.24	....	...	1104
	Autumn	364	242	37	179	327	332	103	600	...	N. 57 37 W.	.22	....	...	1092
	Winter	343	206	26	124	290	251	142	784	...	N. 51 33 W.	.36	....	...	1083
	The year	1232	784	197	804	1789	1159	431	2370	...	N. 62 20 W.	.22	....	...	4383
240. North Salem.	January	75	103	60	101	70	229	141	399	...	N. 37 0 W.	.35	....	...	589
	February	47	153	42	70	44	190	174	352	...	N. 63 47 W.	.35	....	...	536
	March	55	126	53	124	102	217	124	377	...	N. 77 51 W.	.28	....	...	589
	April	65	160	70	156	108	175	119	287	...	N. 75 42 W.	.14	....	...	570
	May	55	150	70	229	125	230	113	206	...	S. 29 3 W.	.14	....	...	589
	June	44	63	44	173	153	311	144	208	...	S. 49 13 W.	.35	....	...	570
	July	53	85	45	159	150	359	130	197	...	S. 55 0 W.	.41	....	...	589
	August	62	113	42	206	148	280	98	229	...	S. 45 24 W.	.23	....	...	589
	September	83	136	63	120	117	241	128	252	...	S. 86 15 W.	.20	....	...	570
	October	81	111	52	152	104	267	142	269	...	S. 80 0 W.	.26	....	...	589
	November	55	150	52	107	78	221	145	334	...	N. 75 20 W.	.27	....	...	570
	December	80	153	57	101	74	207	151	355	...	N. 71 48 W.	.29	....	...	589
	Spring	175	436	193	509	335	622	356	870	...	S. 86 14 W.	.17	....	...	1748
	Summer	159	261	131	538	451	950	372	634	...	S. 48 13 W.	.30	....	...	1748
	Autumn	219	397	167	379	299	729	415	855	...	N. 88 29 W.	.24	....	...	1729
	Winter	202	409	159	272	188	626	466	1106	...	N. 66 48 W.	.33	....	...	1714
	The year	755	1503	650	1698	1273	2927	1609	3465	...	S. 85 6 W.	.24	....	...	6939
241. Amenia.	The year	137	73	11	61	155	138	30	155	...	N. 77 51 W.	.15½	....	...	365
241(*a*). White Plains.	The year	0	7	10	14	12	15	2	10	...	S. 26 14 E.	.16½			

(Nos. 242 and 243.) **Southeastern New York.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
242. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	279	644	214	641	416	798	548	1124	...	N. 83° 3′ W.	.168	N. 68° E.	.02
		Summer	181	457	214	659	467	839	483	528	...	S. 34 32 W.	.203	S. 22 E.	.19
		Autumn	300	508	176	484	315	708	528	822	...	N. 83 35 W.	.190	N. 3 E.	.01
		Winter	230	671	101	301	155	738	586	1184	...	N. 60 36 W.	.331	N. 32 W.	.18
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 12 W.	.190		
	No. of miles.	Spring	1957	6341	1299	5990	3400	5550	3398	10767	...	N. 63 6 W.	.141	N. 58 E.	.03½
		Summer	684	1963	963	3201	1814	4040	2255	2501	...	S. 36 13 W.	.10	S. 38 E.	.16
		Autumn	1374	2642	914	3868	1376	4100	3612	5808	...	N. 88 17 W.	.13	S. 29 E.	.05
		Winter	2686	4086	584	2703	901	4630	3903	10206	...	N. 53 22 W.	.28	N. 29 W.	.14
		The year[2]	...	...	...	...	...	...	...	...	...	N. 74 4 W.	.159		
	M'n vel. in miles p. h'r.	Spring	7.01	9.85	6.07	9.34	8.17	6.89	6.20	9.58	...				
		Summer	3.78	4.30	4.50	4.86	3.88	4.82	4.67	4.74	...				
		Autumn	4.58	5.20	5.19	7.99	4.37	5.79	6.84	7.07	...				
		Winter	11.68	6.09	5.78	8.98	5.81	6.27	6.66	8.62	...				
243. Aggregate number of observations at all stations.	Surface winds.	Spring	5081	7007	1782	5527	6636	7532	5122	9865	251	N. 80 26 W.	.14	N. 79 E.	.05
		Summer	4439	5057	1623	5925	8948	9603	4754	6558	462	S. 43 2 W.	.21	S. 13 E.	.17
		Autumn	5610	5259	1290	4206	5466	7061	4999	8490	290	N. 76 35 W.	.19½	N. 10½ W.	.03
		Winter	5361	6145	1022	2912	4147	6978	5813	10992	133	N. 60 17 W.	.29½	N. 28 W.	.15
		The year[2]	...	...	...	...	...	...	...	...	...	N. 85 17 W.	.18		
	Motion of clouds.	Spring	228	540	331	544	318	1833	2390	1113	...	S. 79 53 W.	.47	N. 9 E.	.03
		Summer	251	446	398	606	379	1954	2052	685	...	S. 67 43 W.	.44	S. 47 E.	.08
		Autumn	197	343	307	510	368	1649	1789	980	...	S. 74 27 W.	.46	S. 54 E.	.03
		Winter	201	392	222	289	205	1684	2293	1075	...	S. 84 10 W.	.56	N. 62 W.	.10
		The year[2]	...	...	...	...	...	...	...	...	...	S. 77 1 W.	.48		
	2 preceding combined.	Spring	5309	7547	2113	6071	6954	9365	7512	10978	251	N. 86 58 W.	.18	N. 78° E.	.04
		Summer	4690	5503	2021	6531	9327	11557	6806	7243	462	S. 48 40 W.	.23½	S. 15 E.	.16
		Autumn	5807	5602	1597	4716	5834	8710	6788	9470	290	N. 83 58 W.	.22½	N. 17½ W.	.03
		Winter	5562	6537	1244	3201	4352	8662	8106	12067	133	N. 67 47 W.	.31½	N. 31 W.	.14
		The year[2]	...	...	...	...	...	...	...	...	...	S. 89 48 W.	.22		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.30	4.55	6.21	7.49	6.64
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.39	.92	1.18	2.48	1.26
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.17	.99	1.32	2.80	1.06
Excess of the latter over the former	—.22	+.07	+.14	+ .32	—.20

[2] Computed from the resultants for the seasons.

(No. 244.) **State of New York** (aggregate previous to the year 1849).

Place of observation.	Years	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
55 stations, 360 years.	January	1141½	805	411	681	1738	1938½	1976½	2466	S. 87° 51′ W.	.33		
	February	960½	750	400	685½	1540½	1673	1930½	2330½	S. 87 6 W.	.33		
	March	1018½	725	.498	765½	1924½	1804	1923½	2520½	S. 82 55 W.	.31		
	April	1230½	1071½	626	785½	1600½	1540½	1671½	2208	N. 82 41 W.	.22		
	May	1090	869½	536½	895	1996½	1984	1822	1949½	S. 71 25 W.	.28		
	June	878	651	430	826	1979	2229	1985½	1946½	S. 67 38½ W.	.34		
	July	827	482½	316	661½	2016½	2775	2274½	1986½	S. 67 27 W.	.43		
	August	1124½	777	388½	711½	1979	2308	1993	2059½	S. 76 21 W.	.33		
	September	982½	733	398	787	1854	2267	1915	2008½	S. 72 30 W.	.33		
	October	1098	759	439	876½	2155½	2231	1857	2078½	S. 69 21 W.	.38		
	November	1162	828	490½	685½	1621½	1887	2042	2319½	S. 89 7 W.	.31		
	December	1245	876	452	648	1680½	2093	2187	2382½	S. 88 57 W.	.33		
	The year	12758	9327½	5385½	9008½	22086	24730	23578	26256	S. 78 59 W.	.31½		
	1826	539	310	345	616	1240	942	1273	1275	S. 68 38 W.	.30		
	1827	1103	641	623	876	1748	1828	2225	2634	S. 86 15 W.	.31½		
	1828	1442	849	1061	1115	3584	3890	3312	3044	S. 62 44 W.	.35		
	1829	1861	1502	1110	1640	3784	4805	4900	4816	S. 76 29 W.	.35		
	1830	2676	1735	926	1457	4394	3586	3652	4204	S. 79 43 W.	.27		
	1831	2317	1417	890	1334	4333	4468	4886	4445	S. 76 42 W.	.35½		
	1832	2956	1754	974	1802	5497	4790	3937	4662	S. 69 33 W.	.29		
	1833	2613	1794	869	2214	4381	4571	4074	5020	S. 74 50 W.	.29		
	1834	2755	2173	971	1845	4135	4894	3960	4805	S. 80 12 W.	.28		
	1835	2903	2158	1359	2317	5338	6784	6206	5785	S. 72 53 W.	.33½		
	1836	2300	2043	1442	2324	3879	3559	4283	4322	S. 76 55 W.	.22½		
	1837	2624	1614	1155	1862	4536	3553	4618	5587	S. 85 2 W.	.29		
	1838	2226	1810	855	1530	3449	4619	4116	5275	S. 85 56 W.	.33		
	1839	2982	2236	1029	1709	4332	5054	4190	5516	S. 85 16 W.	.29		
	1840	2332	2007	871	1970	4458	5010	4569	5867	S. 80 7 W.	.32		
	1841	3601	2200	1037	1876	4949	4443	4598	5640	S. 88 0 W.	.28		
	1842	2942	2544	1254	2317	5502	5567	5605	6483	S. 79 29 W.	.30		
	1843	2804	2014	1171	2023	3752	5182	5966	5944	S. 87 34 W.	.34		
	1844	2806	2319	1064	1861	4475	4689	4819	5107	S. 82 16 W.	.29		
	1845	2456	1418	910	1535	3492	5815	4523	5344	S. 81 21 W.	.37		
	1846	2526	2021	587	1823	3537	4037	2978	4391	S. 83 43 W.	.26		
	1847	1850	1569	598	1367	3104	3764	2286	3733	S. 77 1 W.	.27		
	Total	52614	38128	21101	37413	87899	95850	90976	103899	S. 79 33 W.	.30		
72 stations, 362 years.	January	...	...	...	...	...	...	...	...	S. 87 51 W.	.33	N. 46° W.	.06
	February	...	...	...	...	...	...	...	...	S. 89 23 W.	.32½	N. 16 W.	.07
	March	...	...	...	...	...	...	...	...	S. 82 56 W.	.31	N. 28 W.	.03
	April	...	...	...	...	...	...	...	...	N. 82 59 W.	.22	N. 42½ E.	.12
	May	...	...	...	...	...	...	...	...	S. 71 12 W.	.28	S. 4 E.	.05
	June	...	...	...	...	...	...	...	...	S. 67 36 W.	.34	S. 23 W.	.09
	July	...	...	...	...	...	...	...	...	S. 67 27 W.	.43	S. 35½ W.	.12
	August	...	...	...	...	...	...	...	...	S. 76 21 W.	.33	S. 66 W.	.05
	September	...	...	...	...	...	...	...	...	S. 72 28 W.	.33	S. 27 W.	.06
	October	...	...	...	...	...	...	...	...	S. 69 21 W.	.38	S. 35½ W.	.08
	November	...	...	...	...	...	...	...	...	S. 89 7 W.	.31	N. 16 W.	.06
	December	...	...	...	...	...	...	...	...	S. 88 57 W.	.33	N. 36 W.	.06
	The year	...	...	...	...	...	...	...	...	S. 79 8 W.	.31½		

(Nos. 245 to 248.) **Northern and Central New Jersey.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Belleville,	Thomas B. Merrick,	0	7	1849.
Bloomfield,	Robert L. Cooke,	5	10	1843, 1854 to 1858 inclusive, and 1862.
Burlington,	Prof. Adolph Frost and others,	8	5	1843, 1854 to 1857 and 1863 to 1868, all [inclusive.
Cinnaminson,	William Parry,	0	8	1860.
Dover,	Howard Shriver,	2	6	1866 to 1869 inclusive.
Lambertville,	Jacob S. Gary & L. H. Parsons,	2	5	1849, 1858 and 1859.
Long Branch,	Arch. Alexander,	0	6	1861, 1863 and 1865.
Middletown,	John F. Jenkins,	4	0	1831 to 1834 inclusive.
Mount Holly,	Morgan J. Rhees, M.D.,	7	2	1861 to 1868.

(Nos. 245 to 248.) **Northern and Central New Jersey.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Newark,	W. A. Whitehead,	14	11	1840 and 1856 to 1869 inclusive.
New Brunswick,	E. Allen & G. W. Thompson,	9	0	1860 to 1869 inclusive.
New Germantown,	Arthur B. Noll,	1	2	1868 and 1869.
Newton,	Thomas Ryerson, M.D.,	0	10	1862, 1868 and 1869.
Passaic Valley,	William Brooks,	1	7	1863, 1864 and 1865.
Paterson,	William Brooks,	4	6	1865 to 1869 inclusive.
Pomona Gardens,	....	0	1	1860.
Progress,	Thomas J. Beans,	1	9	1863, 1864 and 1865.
Readington,	John Fleming,	0	4	1866 and 1867.
Riceville,	Prof. L. Harper,	0	8	1861.
Sargeantsville,	John T. Sergeant,	1	0	1857.
Trenton,	F. A. Ewing and E. R. Cook,	8	4	1842 to 1845 and 1865 to 1869, both inclusive.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
245. Trenton. 1842 to 1845 inclusive.	Spring	26	89	24	64	55	130	51	114	...	S. 76° 5′ W.	.17			
	Summer	35	66	63	82	55	168	37	86	...	S. 28 44 W.	.17			
	Autumn	34	69	26	56	43	106	54	94	...	S. 84 9 W.	.17			
	Winter	32	111	21	30	43	97	56	129	...	N. 54 12 W.	.22½			
	The year	127	295	114	232	196	501	198	423	...	S. 75 52 W.	.17			
1840 & '42 to '46 inc.	The year	173	448	167	355	315	711	299	635	...	S. 75 52 W.	.17	....	...	2192
246. Middletown.	The year	61	145	65	118	89	216	194	208	...	S. 86 35 W.	.22	....	...	1461
247. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	123	335	94	165	116	487	368	435	...	N. 81 1 W.	.256			
	Summer	82	222	136	190	85	606	385	264	...	S. 68 48 W.	.288			
	Autumn	150	299	96	114	113	581	373	339	...	S. 89 42 W.	.288			
	Winter	118	251	85	104	80	429	411	464	...	N. 73 32 W.	.366			
	The year[2]	...	...	...	......	...	...	......	......	...	N. 88 6 W.	.290			
No. of miles.	Spring	1330	3967	641	1409.5	1107	4481	3326	5442	...	N. 65 19 W.	.281			
	Summer	526	1904	631	1105	498	4115	2511	2018	...	S. 77 43 W.	.290			
	Autumn	1188	2579	498	904	893	3672	2949	3069.5	...	N. 77 29 W.	.288			
	Winter	2585	1219	2535	6409	9800	6165	2332.3	1576.8	...	S. 82 29 W.	.435			
	The year[2]	...	...	...	......	...	...	......	......	...	N. 74 24 W.	.319			
M'n vel. in miles p.h'r.	Spring	10.81	11.82	6.82	8.54	9.54	9.20	9.04	12.51						
	Summer	6.41	8.58	4.64	5.82	5.86	6.79	6.52	7.64						
	Autumn	7.92	8.63	5.19	7.93	7.90	6.32	7.91	9.05						
	Winter	7.60	7.01	5.43	8.67	11.29	9.03	12.79	11.83						
248. Aggregate number of observations at all stations. Surface winds.	Spring	1156	2706	1399	1548	882	2811	2325	3864	408	N. 55 10 W.	.19			
	Summer	989	1986	1306	1655	1079	4206	2368	2349	500	S. 69 29 W.	.20			
	Autumn	1269	1991	917	955	756	2883	2569	3286	462	N. 68 43 W.	.28			
	Winter	1383	2550	802	579	504	2918	3307	4799	377	N. 57 56 W.	.39½			
	The year[2]	...	...	...	......	...	...	......	......	...	N. 69 42 W.	.25			
Motion of clouds.	Spring	224	533	353	192	229	629	926	702	...	N. 73 58 W.	.27½			
	Summer	239	348	337	183	248	931	959	427	...	S. 78 21 W.	.33½			
	Autumn	199	421	257	179	223	666	868	627	...	S. 88 52 W.	.32			
	Winter	190	431	119	108	139	544	997	807	...	N. 72 14 W.	.45½			
	The year[2]	...	...	...	......	...	...	......	......	...	N. 84 2 W.	.34			
2 preceding combined.	Spring	1380	3239	1752	1740	1111	3440	3251	4566	408	N. 59 43 W.	.20	N. 75° E.	.08½	
	Summer	1228	2334	1643	1838	1327	5137	3327	2776	500	S. 71 52 W.	.22½	S. 14 E.	.15½	
	Autumn	1468	2412	1174	1134	979	3549	3437	3913	462	N. 71 51 W.	.28½	N. 62½ W.	.02	
	Winter	1573	2981	921	687	643	3462	4304	5606	377	N. 60 32 W.	.40	N. 39½ W.	.15	
	The year[2]	...	...	...	......	...	...	......	......	...	N. 72 2 W.	.26½			

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.22	6.75	7.63	9.78	8.59
Velocity in mean direction, on the supposition that all winds from every point of the compass move with the foregoing average velocity	2.62	1.94	2.20	3.58	2.49
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	2.87	1.96	2.21	4.25	2.74
Excess of the latter over the former	+.25	+.02	+.01	+.67	+.25

[2] Computed from the resultants for the seasons.

(Nos. 249 to 252.) **Northern Vermont.**

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Barnet,	B. F. Eaton, M.D.,	1	3	1866, 1867 and 1869.
Brookfield,	T. F. Pollard,	0	4	1863.
Burlington,	Zadok Thompson & McK. Petty,	26	0	1828, 1832, 1833, 1836 to 1850 inclusive, 1854, 1855, 1856 and 1861, 1862 and 1863.
Calais,	James K. Tobey,	0	8	1861, 1862 and 1863.
Charlotte,	D. Underwood & M. E. Wing,	1	9	1868 and 1869.
Craftsbury,	C. A. J. Marsh & Jas. A. Paddock,	15	3	1854 to 1869 inclusive.
Ferrisburgh,	....	0	8	1869.
Lunenburg,	Hiram A. Cutting,	10	7	1859 to 1869 inclusive.
Middlebury,	W. H. Parker and H. A. Sheldon,	6	9	1849, 1852 and 1864 to 1869 inclusive.
Montpelier,	D. P. Thompson and M. M. Marsh,	1	0	1849 and 1863.
Newbury,	David Johnson,	26	0	1823 to 1849 inclusive.
Newport,	J. M. Currier,	0	1	1869.
Saint Johnsbury,	J. K. Colby & J. P. & F. Fairbanks,	4	4	1854 to 1857 inclusive.
Shelburne,	George Bliss,	1	9	1856 and 1857.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
249. Burlington.	Spring	2018	138	99	238	2206	137	407	583	...	N. 80° 31′ W.	.06		
	Summer	1626	124	101	201	2840	176	366	328	...	S. 18 39 W.	.21		
	Autumn	1618	147	86	234	2319	132	440	482	...	S. 45 12 W.	.13½		
	Winter	1738	303	130	251	2139	182	459	485	...	S. 69 52 W.	.07½		
	The year	7000	712	416	924	9504	627	1672	1878	..	S. 46 35 W.	.11		
250. Newburg.	Spring	2037	25	42	50	1885	204	146	430	...	N. 59 30 W.	.12		
	Summer	1654	41	26	46	1834	440	247	469	...	S. 78 31 W.	.17		
	Autumn	1998	28	27	44	1627	305	173	384	...	N. 54 29 W.	.15½		
	Winter	2083	33	19	82	1422	215	125	455	...	N. 31 54 W.	.21½		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 59 49 W.	.15		
251. Surface winds at Smithsonian Stations, in the years 1854, 1855, 1856 and 1857.[1] No. of observations.	Spring	536	168	68	99	814	148	196	367	...	S. 76 14 W.	.130	N. 22° E.	.11
	Summer	343	107	57	97	1186	281	268	395	...	S. 35 48 W.	.338	S. 12 W.	.14
	Autumn	400	142	34	131	1032	198	260	406	...	S. 43 47 W.	.251	S. 3 W.	.05
	Winter	355	127	37	81	645	131	203	340	...	S. 72 41 W.	.192	N. 9 W.	.08
	The year[2]	...	...	...	...	...	...	...	...	...	S. 51 24 W.	.217		
No. of miles.	Spring	3049	1251	427	581	5919	1054	1918	3591	...	S. 80 11 W.	.199	N. 26 E.	.14
	Summer	1372	629	202	516	7292	1540	1924	2341	...	S. 34 44 W.	.403	S. 7½ E.	.18
	Autumn	1754	1071	152	526	7372	1345	2702	3887	...	S. 56 9 W.	.324	S. 30 W.	.03
	Winter	1527	620	209	493	5226	1084	2702	4256	...	S. 76 0 W.	.349	N. 48 W.	.11
	The year[2]	...	...	...	...	...	...	...	...	...	S. 61 6 W.	.299		
M'n vel. in miles per hour.	Spring	5.69	7.45	6.28	5.87	7.27	7.12	9.79	9.78	...				
	Summer	4.00	5.88	3.54	5.32	6.15	5.48	7.18	5.93	...				
	Autumn	4.38	7.54	4.47	4.02	7.14	6.79	10.39	9.57	...				
	Winter	4.30	4.88	5.65	6.09	8.10	8.27	13.31	12.52	...				

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.42	5.78	7.23	8.40	7.21
Velocity in mean direction, on the supposition that all winds from every point of the compass move with the foregoing average velocity	.96	1.95	1.81	1.61	1.56
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.47	2.33	2.34	2.93	2.16
Excess of the latter over the former	+.51	+.38	+.53	+1.32	+.60

[2] Computed from the resultants for the seasons.

(No. 252.) **Northern Vermont.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
252. Aggregate number of observations at all stations.	Surface winds.	Spring	6044	1140	610	1041	7216	1738	2666	4011	246	N. 83° 42′ W.	.18½		
		Summer	4688	780	454	801	8376	2709	2876	3145	312	S. 58 37 W.	.26½		
		Autumn	5242	932	461	835	7496	2124	2712	3331	202	S. 74 40 W.	.21½		
		Winter	5666	1094	537	862	6592	1747	2581	3430	209	N. 84 21 W.	.19		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 78 37 W.	.20½		
	Motion of clouds.	Spring	696	178	126	202	798	419	991	861	...	N. 82 39 W.	.35		
		Summer	559	181	119	161	826	680	1275	1005	...	S. 89 22 W.	.44		
		Autumn	785	176	157	131	952	552	1216	860	...	N. 87 26 W.	.38		
		Winter	537	106	88	94	724	384	898	711	...	N. 87 48 W.	.39		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 87 21 W.	.39		
	2 preceding combined.	Spring	6740	1318	736	1243	8014	2157	3657	4872	246	N. 83 23 W.	.30	N. 28½° W.	.08½
		Summer	5247	861	573	962	9202	3389	4151	3150	312	S. 58 45 W.	.32	S. 6½ W.	.13
		Autumn	6027	1108	618	966	8448	2676	3928	4191	202	S. 79 26 W.	.24	S. 1 E.	.02
		Winter	6203	1200	625	956	7316	2131	3479	4141	209	N. 85 13 W.	.22	N. 35 E.	.07
		The year[1]	...	...	...	...	...	...	...	...	...	S. 81 52 W.	.26		

[1] Computed from the resultants for the seasons.

(Nos. 253 to 256.) **Southern Vermont.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs	mos.	Date.
Bennington,	Mr. Hunt,	0	4	1843.
Brandon,	D. and H. Bucklard,	12	9	1854 to 1869 inclusive.
Brattleboro,	Charles C. Frost,	0	11	1850.
Castleton,	D. Underwood & Rev. R. G. Williams,	1	8	1854, 1855 and 1869.
Fayetteville,	Gen. Martin Field,	7	0	1826 to 1832 inclusive.
Grafton,	Mr. Putnam,	0	5	1843.
Hartford,	B. F. Eaton,	0	1	July, 1869.
Norwich,	A. Jackman,	0	8	1856 and 1857.
Randolph,	Charles L. Paine,	4	8	1851 and 1865 to 1869 inclusive.
Rupert,	Joseph Parker,	3	11	1857, 1858 and 1860 to 1863 inclusive.
Rutland,	S. O. Mead and others,	1	10	1789, 1863 and 1864.
Springfield,	Rev. J. W. Chickering,	2	3	1860 to 1863 inclusive.
Woodstock,	Charles Marsh and others,[1]	1	11	1857, 1868 and 1869.
Wilmington,	Rev. John B. Perry,	0	1	June, 1866.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
253. Rutland.	The year	153	13	16	76	272	182	125	258	...	S. 72° 55′ W.	.34			
254. Fayetteville.	Spring	46	71	27	32	71	104	95	187	...	N. 71 35 W.	.33½	....	...	633
	Summer	31	50	35	33	112	120	103	156	...	S. 77 59 W.	.32½	....	...	640
	Autumn	28	60	25	21	116	101	70	215	...	N. 84 32 W.	.33½	....	...	637
	Winter	48	60	11	15	78	99	102	205	...	N. 71 48 W.	.43	....	...	632
	The year	153	241	98	101	377	424	370	763	...	N. 82 29 W.	.35			

[1] Lester A. Miller and H. Doten.

(Nos. 255 and 256.) **Southern Vermont.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
255. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observat'ns.	Spring	393	38	41	88	426	144	174	242	...	N. 89° 50′ W.	.184		
		Summer	221	4	16	96	491	98	75	131	...	S. 25 44 W.	.265		
		Autumn	309	16	42	97	454	226	86	250	...	S. 58 21 W.	.207		
		Winter	364	19	48	67	424	145	113	227	...	S. 82 20 W.	.169		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 60 7 W.	.186		
	No. of miles.	Spring	1879	598	719	750	1909	1035	1070	1326	...	N. 86 20 W.	.103		
		Summer	994	10	42	287	1622	394	178	434	...	S. 25 11 W.	.195		
		Autumn	1333	104	155	566	1887	1314	403	1192	...	S. 57 59 W.	.228		
		Winter	1871	102	777	818	2308	753	754	1185	...	S. 47 32 W.	.097		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 55 38 W.	.134		
	M'n vel. in miles p.h'r.	Spring	4.78	15.74	17.54	8.52	4.48	7.19	6.15	5.48					
		Summer	4.50	2.50	2.62	2.99	3.30	4.02	2.37	3.31					
		Autumn	4.32	6.50	3.69	5.84	4.16	5.81	4.69	4.77					
		Winter	5.14	5.37	16.19	12.21	5.44	5.19	6.67	5.22					
256. Aggregate number of observations at all stations.	Surface winds.	Spring	1379	534	249	704	1417	822	833	1666	669	N. 73 22 W.	.18½		
		Summer	834	273	212	661	1590	804	595	1202	816	S. 56 44 W.	.19½		
		Autumn	1194	358	186	623	1562	885	617	1328	860	S. 79 28 W.	.17½		
		Winter	1237	452	211	514	1417	846	737	1504	658	N. 80 53 W.	.20		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 85 39 W.	.18		
	Motion of clouds.	Spring	373	209	78	208	260	937	674	934	...	N. 86 4 W.	.44		
		Summer	309	238	46	80	236	855	745	1040	...	N. 80 8 W.	.52		
		Autumn	404	192	64	147	262	867	597	954	...	N. 81 37 W.	.46		
		Winter	202	140	62	74	134	779	618	889	...	N. 83 4 W.	.55		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 82 37 W.	.49		
	2 preceding combined.	Spring	1752	743	327	912	1677	1759	1507	2600	669	N. 79 55 W.	.26	N. 29½° E.	.03½
		Summer	1143	511	258	741	1826	1659	1340	2242	816	S. 81 44 W.	.28	S. 4½ W.	.05½
		Autumn	1598	550	250	770	1824	1752	1214	2282	860	S. 89 52 W.	.26	S. 42½ E.	.02
		Winter	1439	592	273	588	1551	1625	1355	2393	658	N. 80 43 W.	.30	N. 35½ W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 35 W.	.27½		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.01	3.49	4.70	6.09	5.07
Velocity in mean direction, on the supposition that all winds from every point of the compass move with the foregoing average velocity	1.11	.92	.97	1.03	.94
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	.62	.68	1.07	.59	.68
Excess of the latter over the former	—.49	—.24	+.10	—.44	—.26

[2] Computed from the resultants for the seasons.

(Nos. 257 to 260.) **Western Massachusetts.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Amherst,	Prof. E. S. Snell, LL.D.,	20	11	1837 to 1841, 1843, 1854 to 1859 and 1861 to 1869, [all inclusive.
Baldwinsville,	Rev. E. Dewhurst,	2	10	1862 to 1865 inclusive.
Cabotville,	Mr. Huntington,	0	3	1843.
Florida,	L. F. Whitcomb,	4	0	1857 to 1861 inclusive.
Hinsdale,	Rev. E. Dewhurst,	1	6	1868 and 1869.
Northampton,	Mr. Plant,	0	4	1843 and 1845.
Pittsfield,	....	0	2	1853.
Richmond,	William Bacon,	12	0	1854 to 1858 and 1860 to 1869, both inclusive.
Southwick,	Amasa Holcomb,	2	7	1854 to 1857 inclusive.
Springfield,	Lucius C. Allin,	2	4	1854, 1855 and 1856.
Westfield,	Rev. Dr. Emerson Davis,	9	4	1855 to 1859 and 1861 to 1866, both inclusive.
West Stockbridge,	....	0	1	1855.
Williamstown,	Prof. C. Dewey and others,[1]	31	5	1816 to 1834, 1852, 1855 to 1858 and 1861 to 1869, [all inclusive.

[1] Ebenezer Kellogg, the author, and other officers and students of Williams College.

(Nos. 257 to 260.) **Western Massachusetts.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
257. Williamstown.	Spring	57	59	176	697	782	303	216	2198	...	N. 82° 40′ W.	.29			
	Summer	76	58	116	648	951	454	217	2189	...	N. 61 10 W.	.36			
	Autumn	80	66	142	651	704	440	313	2073	...	N. 85 21 W.	.32½			
	Winter	59	32	153	653	593	297	304	2529	...	N. 70 2 W.	.38			
	The year	272	215	587	2649	3030	1494	1050	8989	...	N. 82 1 W.	.32½			
258. Amherst, 1837 to 1841.	January	1	5	4	66	22	24	24	171	...	N. 69 42 W.	.36	N. 53° W.	.06	155
	February	6	8	2	60	15	28	10	156	...	N. 63 34 W.	.35	N. 12 E.	.06	141
	March	4	4	1	59	11	29	10	185	...	N. 53 39 W.	.41	N. 15 W.	.17	155
	April	10	16	4	66	11	30	8	163	...	N. 55 2 W.	.33	N. 16 E.	.11	150
	May	6	30	7	63	17	60	18	117	...	N. 85 9 W.	.22	S. 33 E.	.10	155
	June	7	17	0	77	29	50	10	118	...	S. 67 5 W.	.22	S. 22 E.	.20	150
	July	4	4	1	64	21	88	13	118	...	S. 70 47 W.	.37	S. 18 W.	.23	155
	August	8	20	3	66	15	72	7	125	...	S. 88 34 W.	.26	S. 5 E.	.10	155
	September	14	16	6	78	28	43	13	109	...	S. 76 54 W.	.16	S. 47 E.	.19	150
	October	10	9	4	67	16	52	11	144	...	N. 78 53 W.	.30	S. 53 W.	.05	155
	November	13	18	2	51	8	41	6	167	...	N. 55 19 W.	.41	N. 20 W.	.16	150
	December	9	17	0	47	7	38	14	174	...	N. 57 2 W.	.47	N. 34 W.	.21	155
	Spring	20	50	12	188	39	119	36	465	...	N. 64 30 W.	.32	....	...	460
	Summer	19	41	4	207	65	210	30	361	...	S. 77 27 W.	.28	....	...	460
	Autumn	37	43	12	196	52	136	30	420	...	N. 77 13 W.	.38	....	...	455
	Winter	16	30	6	173	44	90	48	501	...	N. 62 57 W.	.39	....	...	451
	The year	92	164	34	764	200	555	144	1747	...	N. 73 13 W.	.30	....	...	1826
259. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	235	552	88	530	276	666	291	1556	...	N. 59 6 W.	.263	N. 14 E.	.09	
	Summer	138	180	87	576	326	891	239	903	...	S. 62 35 W.	.268	S. 3 E.	.17	
	Autumn	164	225	98	605	251	769	227	1348	...	N. 87 2 W.	.256	S. 12 W.	.04	
	Winter	209	404	81	542	184	512	313	1705	...	N. 55 43 W.	.319	N. 9 W.	.13	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 15 W.	.251			
No. of miles.	Spring	1603	6911	663	4571	2344	5865	3073	19651	...	N. 49 9 W.	.409	N. 9 W.	.15	
	Summer	642	1105	659	4291	2074	6020	1734	6648	...	S. 62 28 W.	.181	S. 32 E.	.24	
	Autumn	915	1806	721	5480	2035	7161	2304	12759	...	N. 88 41 W.	.288	South	.12	
	Winter	1624	4289	1210	4816	1490	4846	4064	21618	...	N. 52 26 W.	.479	N. 31 W.	.19	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 67 54 W.	.301			
M'n vel. in miles p. h'r.	Spring	6.82	12.52	7.53	8.62	8.49	8.81	10.55	12.63						
	Summer	4.65	6.14	7.57	7.45	6.36	6.76	7.26	7.36						
	Autumn	5.58	8.03	7.36	9.06	8.11	9.31	10.15	9.47						
	Winter	7.77	10.64	14.94	8.89	8.10	9.46	12.98	12.68						
260. Aggregate number of observations at all stations. Surface winds.	Spring	918	1970	896	3208	1669	2577	2026	9109	417	N. 63 15 W.	.28	N. 40 E.	.06	
	Summer	734	977	813	3387	2165	4276	2443	6896	537	S. 78 51 W.	.30	S. 2½ W.	.14	
	Autumn	878	1086	769	3118	1583	2874	2078	8198	537	N. 75 15 W.	.30	S. 47 W.	.00½	
	Winter	939	1400	763	2967	1342	2490	2454	9780	495	N. 63 6 W.	.36	N. 19 W.	.09	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 74 59 W.	.30			
Motion of clouds.	Spring	174	830	94	637	187	1302	760	2098	...	N. 71 20 W.	.35	N. 42 E.	.10	
	Summer	190	409	78	506	296	1682	1074	1289	...	S. 79 32 W.	.45	S. 17½ W.	.14	
	Autumn	138	334	105	489	158	1188	695	1589	...	N. 85 32 W.	.42	S. 45 W.	.02	
	Winter	99	499	55	518	174	1052	743	2099	...	N. 73 28 W.	.44	N. 14½ W.	.08	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 83 22 W.	40½			
2 preceding combined.	Spring	1092	2800	990	3845	1856	3879	2786	11207	417	N. 60 36 W.	.31	N. 31 E.	.08	
	Summer	924	1386	891	3893	2461	5958	3517	8185	537	S. 78 57 W.	.33	S. 4 W.	.14	
	Autumn	1016	1420	874	3607	1741	4062	2773	9787	537	N. 77 41 W.	.32½	S. 17 W.	.01	
	Winter	1038	1899	818	3485	1516	3542	3197	11879	495	N. 65 37 W.	.37½	N. 18½ W.	.09	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 75 57 W.	.32			

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.65	6.94	9.00	11.13	9.43
Velocity in mean direction, on the supposition that all winds from every point of the compass move with the foregoing average velocity	2.80	1.86	2.30	3.55	2.37
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.64	1.88	2.59	4.45	2.84
Excess of the latter over the former	+.84	+.02	+.29	+.90	+.47

[2] Computed from the resultants for the seasons.

(Nos. 261 to 267.) **Connecticut.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Brookfield,	Sanford W. Roe,	1	2	1868 and 1869.
Canton,	Jarvis Case,	1	7	1861, 1862 and 1863.
Colebrook,	Miss C. Rockwill,	8	9	1860 to 1869 inclusive.
Columbia,	W. G. Yeomans,	11	8	1857, 1858 and 1860 to 1869 inclusive.
Fort Trumbull,	Post Surgeon,	14	10	1827, 1828, 1831 to 1835, 1843 to 1845 and 1849 to 1853 all inclusive.
Georgetown,	Aaron B. Hull,	0	11	1856.
Groton,	Rev. E. Dewhurst,	2	3	1866, 1867 and 1868.
Hartford,	Charles H. Hoadley,	0	1	1850.
Hampton,	....	11	0	1840 to 1850 inclusive.
Litchfield,	J. L. Hendrich,	3	0	1849, 1850 and 1851.
Middletown,	Prof. Augustus W. Smith,	13	4	1834, 1835, 1836, 1843 and 1859 to 1869 inclusive.
New Haven,	Connecticut Academy and others,[1]	5	2	1804, 1811 to 1813 and 1862 to 1864 both inclusive.
New London,	Rev. Tryon Edwards,	3	9	1854 to 1857 inclusive.
North Colebrook,	M. H. Cobb,	0	3	1849.
Norwalk,	....	0	1	1856.
Norwich,	N. Scholfield,	1	10	1856 and 1857.
Plymouth,	Dwight W. Learned,	2	0	1862, 1863 and 1864.
Pomfret,	Rev. Daniel Hunt,	14	3	1854 to 1869 except 1860.
Salisbury,	Dr. Ovid Plumb,	2	0	1844 and 1845.
Saybrook,	James Rankin,	7	1	1854 to 1861 inclusive.
Stafford,	Mr. Linsley,	0	1	1843.
Wallingford,	Benjamin F. Harrison,	6	4	1856 to 1862 inclusive.
Waterbury,	Rev. R. G. Williams,	2	4	1867, 1868 and 1869.
West Cornwall,	T. S. Gold,	1	0	1854.
Windsor,	R. H. Phelps,	0	3	1850.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
261. Salisbury.	The year	1122	202	160	690	725	260	100	395	...	N. 53° 7′ E.[2]	.06	....	...	731
262. Litchfield.	Spring	52	45	59	40	45	71	88	113	...	N. 67 52 W.	.21	....	...	276
	Summer	47	38	68	46	57	135	102	95	...	S. 72 15 W.	.24½	....	...	276
	Autumn	68	35	46	45	54	88	88	91	...	N. 85 23 W.	.22	....	...	273
	Winter	52	22	43	25	40	90	96	88	...	N. 86 41 W.	.32	....	...	270
	The year[3]	...	...	...	...	...	...	...	...	...	N. 81 32 W.	.23½	....	...	1095
263. New Haven.	The year	449	582	96	484	320	593	309	1253	...	N. 65 7 W.	.24½	....	...	1462
264. Fort Trumbull.	January	107	221	25	78	37	140	132	455						
	February	94	142	33	84	27	162	124	424						
	March	98	153	22	89	54	206	120	462						
	April	87	234	52	126	68	214	100	281						
	May	63	192	40	184	83	309	92	229						
	June	39	112	19	75	80	456	78	189						
	July	61	149	11	116	101	446	120	185						
	August	68	228	24	156	93	425	51	157						
	September	117	231	40	109	67	294	76	220						
	October	107	213	37	82	45	218	94	274						
	November	121	164	26	61	36	135	144	348						
	December	134	212	33	30	21	130	137	369						
	Spring	248	579	114	399	205	729	312	972	...	N. 64 15 W.	.22			
	Summer	168	489	54	347	274	1327	249	531	...	S. 58 13 W.	.31½			
	Autumn	345	608	103	252	148	647	314	842	...	N. 48 11 W.	.27			
	Winter	335	575	91	192	85	432	393	1248	...	N. 40 48 W.	.43			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 65 12 W.	.26			
265. Hampton.	Spring	32	219	15	28	26	243	140	305	...	N. 61 19 W.	.38			
	Summer	32	165	19	14	22	362	134	265	...	N. 83 38 W.	.43			
	Autumn	47	210	17	22	21	209	133	322	...	N. 53 54 W.	.41			
	Winter	26	204	12	17	13	177	171	368	...	N. 54 10 W.	.48½			
	The year	137	798	63	81	82	991	578	1260	...	N. 63 8 W.	.41½			

[1] H. G. Dubois, Jr., D. C. Leavenworth and Prof. E. Cutler.

[2] Computed from observations recorded from 32 points of the compass.

[3] Computed from the resultants for the seasons.

(Nos. 265(*a*) to 267.) **Connecticut.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.
265(*a*). Wallingford.	January	854½	545½	158½	18½	33	5	46½	17½	227½	381	336	54	136½	219⅓	334½	350½	N. 30° 30′ W.	.38
	February	643½	391½	223	34	47½	20	70½	66½	192½	211	220	68	191½	124	506½	244	N. 32 24 W.	.36
	March	665	171	128½	52	30½	31½	103	95	365½	276½	230½	63½	169	206	656½	476	N. 45 12 W.	.36
	April	538½	349	184½	88	86½	29½	160½	150	403½	307	170½	32	164½	163	488½	285	N. 33 42 W.	.23
	May	503½	289	273	112	73½	25½	184	207	737	372	153	44	90	92	303½	150½	S. 17 0 W.	.18
	June	378½	266	113	33	38	16	136½	97	717	522	74½	4	60½	65	320½	229	S. 47 42 W.	.17
	July	438½	185⅓	89⅓	31	85½	12	105½	104½	1098½	455	250	25	111½	80½	386	99	S. 34 12 W.	.27
	August	731	234½	228½	50	116½	17	251	108	577	413½	399	30	107½	29½	384½	54	S. 72 54 W.	.18
	September	678½	145	210	20	59	11	123½	84	616½	539	189	32	190	77	465	160½	N. 85 48 W.	.22
	October	966½	195	196½	7	76½	22	96	73	395½	345	251	74	170½	115	515	220	N. 39 24 W.	.30
	November	725	120	131	16	111½	14	88	84½	261	237½	306	50	356½	113½	649½	334½	N. 49 12 W.	.39
	December	1106½	126½	164½	34½	42	11	61½	21½	260½	297	241	75	253½	101½	557	365	N. 35 12 W.	.44
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 51 7 W.	

			Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
266. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2]	No. of observations.	Spring	333	628	184	421	440	976	390	1191	...	N. 79° 8′ W.	.209	N. 65° E.	.03
		Summer	231	562	199	505	654	1355	361	715	...	S. 46 13 W.	.243	S. 17 E.	.20
		Autumn	405	567	158	404	304	1235	379	1206	...	N. 81 32 W.	.256	N. 60 W.	.02
		Winter	386	523	150	280	194	708	505	1484	...	N. 55 41 W.	.360	N. 20 W.	.18
		The year[3]	...	...	...	...	...	...	...	...	...	N. 83 10 W.	.234		
	No. of miles.	Spring	3063	7786	1876	2276	2430	5491	3979	11402	...	N. 38 31 W.	.273	N. 24 E.	.10
		Summer	1711	3428	1796	2926	3411	6923	2367	3497	...	S. 42 27 W.	.181	S. 20 E.	.27
		Autumn	2741	3885	1036	3264	1845	7099	3601	7915	...	N. 76 46 W.	.249	S. 29 W.	.07
		Winter	2980	4381	1830	2822	1122	4197	5367	13655	...	N. 48 55 W.	.379	N. 30 W.	.15
		The year[3]	...	...	...	...	...	...	...	...	...	N. 60 9 W.	.243		
	M'n vel. in miles p. h'r.	Spring	9.20	12.40	10.20	5.41	5.52	5.63	10.20	9.57					
		Summer	7.41	6.10	9.03	5.79	5.22	5.11	6.56	4.89					
		Autumn	6.77	6.85	6.56	8.08	6.07	5.75	9.50	6.56					
		Winter	7.72	8.38	12.20	10.08	5.78	5.93	10.63	9.20					
267. Aggregate number of observations at all stations.	Surface winds.	Spring	2118	3897	927	2164	2268	4423	2073	7748	1850	N. 57 55 W.	.23½		
		Summer	1642	2839	813	2133	3106	7139	2228	5644	2120	S. 74 11 W.	.27		
		Autumn	2290	3177	733	1834	1834	5311	2227	7716	2010	N. 65 36 W.	.29		
		Winter	2697	3378	686	1170	1264	3750	2571	9387	1918	N. 48 45 W.	.39½		
		The year	8747	13291	3159	7301	8472	20623	9099	30495	7898	N. 67 21 W.	.27		
	Motion of clouds.	Spring	339	1188	159	298	465	1429	1499	2646	...	N. 66 44 W.	.43		
		Summer	387	1014	211	302	765	2343	2012	2270	...	N. 88 58 W.	.44½		
		Autumn	303	875	142	365	535	1944	1577	2460	...	N. 82 21 W.	.45		
		Winter	268	841	135	229	316	1196	1477	2487	...	N. 67 46 W.	.49½		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 76 19 W.	.44½		
	2 preceding combined.	Spring	2457	5085	1086	2462	2733	5852	3572	10394	1850	N. 60 59 W.	.28	N. 60½ E.	.05½
		Summer	2029	3853	1024	2435	3871	9482	4240	7914	2120	S. 80 1 W.	.30½	S. 1½ W.	.16
		Autumn	2593	4052	875	2199	2369	7255	3804	10176	2010	N. 71 44 W.	.32	S. 54½ W.	.01
		Winter	2965	4219	821	1399	1580	4946	4048	11874	1918	N. 53 25 W.	.41	N. 14½ W.	.14
		The year	10044	17209	3806	8495	10553	27535	15664	40358	7898	N. 70 34 W.	.31		

[1] Computed by the observer.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.39	5.69	6.70	8.60	7.34
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.75	1.38	1.72	3.09	1.72
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.29	1.03	1.67	3.26	1.78
Excess of the latter over the former	+.54	—.35	—.05	+.17	+.06

[3] Computed from the resultants for the seasons.

(Nos. 268 to 273.) **Long Island.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bellport,	H. W. Titus,	2	10	1857, 1861 and 1862.
Brookhaven (Moriches),	E. A. Smith and Daughters,	5	10	1864 to 1869 inclusive.
Brooklyn,	....	0	1	1843.
East Hampton,	Clinton Academy,	17	0	1827 to 1843 inclusive.
Farmingdale,	John C. Merritt,	1	8	1868 and 1869.
Flatbush,	Erasmus Hall,	34	0	1826 to 1849 inclusive, 1856, 1857 and 1861 to 1869 inclusive.
Flushing,	....	0	1	
Fort Hamilton,	Post Surgeon,	16	6	1843 to 1859 inclusive.
Jamaica,	Union Hall,	25	0	1826 to 1850 inclusive.
Jericho,	....	0	1	1849.
Naval Hospital,	....	4	1	1865 to 1869 inclusive.
Oyster Bay,	G. B. Docharty and N. H. Wells,	2	0	1834 and 1837.
Sag Harbor,	E. N. Byram,	4	10	1854 to 1858 inclusive.
Sands' Point,	Mr. Calkins,	0	2	1843.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
268. Flatbush.	January	122	239	13	69	33	264	217	531	...	N. 54° 3′ W.	.47	....	...	744
	February	99	267	17	49	15	227	208	474	...	N. 48 8 W.	.43	....	...	678
	March	108	242	29	116	88	306	150	444	...	N. 62 25 W.	.31	....	...	744
	April	95	249	50	197	155	264	83	346	...	S. 76 55 W.	.10	....	...	720
	May	76	231	39	242	195	342	69	232	...	S. 25 38 W.	.16	....	...	744
	June	51	174	35	205	216	383	118	258	...	S. 44 30 W.	.27	....	...	720
	July	84	163	20	144	223	476	110	268	...	S. 55 22 W.	.34	....	...	744
	August	103	225	41	200	195	395	77	252	...	S. 40 58 W.	.21	....	...	744
	September	121	249	39	151	137	323	110	310	...	N. 79 3 W.	.17	....	...	720
	October	127	227	35	141	110	345	143	360	...	N. 75 52 W.	.25	....	...	744
	November	108	245	20	85	38	274	208	462	...	N. 54 6 W.	.38	....	...	720
	December	140	252	13	51	34	225	242	531	...	N. 49 46 W.	.50	....	...	744
	Spring	279	722	118	555	438	912	302	1022	...	N. 86 45 W.	.15	....	...	2208
	Summer	238	562	96	549	634	1254	305	778	...	S. 49 57 W.	.25	....	...	2208
	Autumn	356	721	94	377	285	942	461	1132	...	N. 67 0 W.	.27	....	...	2184
	Winter	361	758	43	169	82	716	667	1536	...	N. 50 44 W.	.47	....	...	2166
	The year	1234	2763	351	1650	1439	3824	1735	4468	...	N. 75 53 W.	.24	....	...	8766
269. Fort Hamilton.	January	254	293	95	46	97	243	226	640						
	February	175	284	111	62	69	215	197	560						
	March	190	259	133	117	94	218	139	686						
	April	141	280	140	156	161	302	111	455						
	May	144	313	191	175	224	367	129	290						
	June	117	150	89	202	199	453	176	380						
	July	170	261	83	175	187	553	161	317						
	August	167	266	93	160	155	509	132	420						
	September	183	307	100	130	115	407	125	445						
	October	237	269	100	124	118	345	177	531						
	November	246	299	117	81	81	293	177	628						
	December	170	304	120	75	48	220	208	779						
	Spring	475	852	464	448	479	887	379	1431	...	N. 43 37 W.	.17			
	Summer	454	677	265	537	541	1515	469	1117	...	N. 77 40 W.	.22			
	Autumn	666	875	317	335	314	1045	479	1604	...	N. 46 16 W.	.29			
	Winter	599	881	326	183	214	678	631	1979	...	N. 38 32 W.	.42			
	The year	2194	3285	1372	1503	1548	4125	1958	6131	...	N. 53 16 W.	.25			

(Nos. 270 to 272.) **Long Island.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
270. Jamaica.	January	147	209	60	97	76	190	156	615	...	N. 44° 49′ W.	.29	....	...	775
	February	124	228	54	93	61	176	150	526	...	N. 45 9 W.	.31	....	...	706
	March	121	203	61	163	125	242	140	495	...	N. 59 20 W.	.26	....	...	775
	April	92	213	80	144	173	288	108	402	...	N. 88 57 W.	.17	....	...	750
	May	77	162	114	204	237	360	157	239	...	S. 36 58 W.	.22	....	...	775
	June	76	112	78	150	243	399	149	293	...	S. 54 29 W.	.31	....	...	750
	July	97	116	30	116	273	258	102	358	...	S. 65 54 W.	.35	....	...	775
	August	97	223	70	132	201	402	147	278	...	S. 63 32 W.	.26	....	...	775
	September	124	216	73	144	166	283	139	355	...	N. 77 55 W.	.19	....	...	750
	October	109	193	60	131	124	317	156	460	...	N. 71 39 W.	.29	....	...	775
	November	106	191	77	115	71	216	187	537	...	N. 54 4 W.	.36	....	...	750
	December	151	264	58	93	48	222	156	558	...	N. 48 37 W.	.41	....	...	775
	Spring	290	578	255	511	535	890	405	1136	...	S. 88 20 W.	.18	....	...	2300
	Summer	270	451	178	398	717	1259	398	929	...	S. 61 9 W.	.27	....	...	2300
	Autumn	339	600	210	390	361	816	482	1352	...	N. 65 25 W.	.27	....	...	2275
	Winter	422	701	172	283	185	588	462	1699	...	N. 42 35 W.	.39	....	...	2256
	The year	1321	2330	815	1582	1798	3553	1747	5116	...	N. 74 55 W.	.24	....	...	9131
271. East Hampton.	January	87	155	90	67	73	112	191	279	...	N. 88 13 W.	.39	....	...	527
	February	101	107	115	56	57	110	149	265	...	N. 44 3 W.	.26	....	...	480
	March	92	122	111	100	102	140	112	275	...	N. 53 43 W.	.17	....	...	527
	April	59	136	149	113	135	145	93	190	...	S. 9 48 W.	.03	....	...	510
	May	46	98	183	125	194	191	80	137	...	S. 8 0 E.	.20	....	...	527
	June	50	85	121	144	198	197	81	144	...	S. 9 35 W.	.22	....	...	510
	July	35	66	107	127	184	293	94	143	...	S. 22 27 W.	.39	....	...	527
	August	52	116	161	144	193	193	58	137	...	S. 40 19 W.	.24	....	...	527
	September	82	156	138	123	120	181	62	158	...	S. 8 45 E.	.05	....	...	510
	October	86	126	138	117	118	151	110	208	...	N. 69 31 W.	.05	....	...	527
	November	90	122	92	68	91	95	202	260	...	N. 59 49 W.	.30	....	...	510
	December	104	148	93	59	72	94	201	283	...	N. 44 47 W.	.29	....	...	527
	Spring	197	356	443	338	431	476	285	602	...	S. 41 38 W.	.07	....	...	1564
	Summer	137	267	389	415	575	683	233	424	...	S. 11 16 W.	.24	....	...	1564
	Autumn	258	404	368	308	329	427	374	626	...	N. 60 54 W.	.16	....	...	1547
	Winter	292	410	298	182	202	316	541	827	...	N. 45 24 W.	.29	....	...	1534
	The year	884	1437	1498	1243	1537	1902	1433	2479	...	S. 84 24 W.	.09	....	...	6209
272. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	100	177	103	131	283	230	258	326	...	N. 75 58 W.	.210	N. 5½° E.	.08	
	Summer	83	190	117	184	293	357	210	192	...	S. 33 55 W.	.237	S. 24 E.	.18	
	Autumn	145	190	97	165	224	327	216	312	...	S. 77 19 W.	.195	S. 57 E.	.02	
	Winter	154	210	78	100	110	258	304	474	...	N. 62 22 W.	.349	N. 28 W.	.22	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 15 W.	.211			
No. of miles.	Spring	724	1598	621	708	1624	1464	1726	2630	...	N. 76 51 W.	.217	N. 25 E.	.09	
	Summer	409	1193	611	1003	1686	2275	1246	1022	...	S. 34 52 W.	.260	S. 30 E.	.21	
	Autumn	1030	1251	493	989	1279	2135	1299	2293	...	N. 88 50 W.	.218	N. 40 E.	.05	
	Winter	916	1297	383	600	667	1696	2199	4501	...	N. 60 42 W.	.453	N. 30 W.	.29	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 83 15 W.	.252			
M'n vel. in miles p.h'r.	Spring	7.24	9.03	6.03	5.40	5.74	6.37	6.69	8.07	...					
	Summer	4.93	6.27	5.22	5.45	5.75	6.37	5.93	5.32	...					
	Autumn	7.10	6.58	5.08	5.99	5.71	6.53	6.01	7.35	...					
	Winter	5.95	6.18	4.91	6.00	6.06	6.57	7.23	9.50	..					

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.90	5.81	6.42	7.26	6.60
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.45	1.38	1.25	2.53	1.39
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.50	1.51	1.40	3.29	1.66
Excess of the latter over the former	+.05	+.13	+.15	+.76	+.27

[2] Computed from the resultants for the seasons.

(No. 273.) **Long Island.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
273. Aggregate number of observations at all stations.	Surface winds.	Spring	1750	3718	1839	3020	2595	4633	2216	6150	314	N. 77° 26′ W.	.12½		
		Summer	1620	2985	1477	3248	3414	6739	2269	4626	486	S. 51 51 W.	.21		
		Autumn	2215	3808	1464	2286	1885	4814	2852	6640	529	N. 62 29 W.	.22		
		Winter	2307	3910	1262	1412	1009	3735	3595	8333	369	N. 48 22 W.	.37		
		The year	7892	14421	6042	9966	8903	19921	10932	25749	1698	N. 72 34 W.	.20		
	Motion of clouds.	Spring	79	242	71	90	141	739	925	565	...	S. 87 7 W.	.54		
		Summer	180	328	138	166	131	868	861	620	...	S. 89 14 W.	.43½		
		Autumn	134	289	226	191	167	833	733	681	...	S. 86 42 W.	.38		
		Winter	62	156	111	103	101	775	795	564	...	S. 84 3 W.	.54½		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 86 37 W.	.47½		
	2 preceding combined.	Spring	1829	3960	1910	3110	2736	5372	3141	6715	314	N. 82 20 W.	.16½	S. 61° E.	.06
		Summer	1800	3313	1615	3414	3545	7607	3130	5246	486	S. 59 12 W.	.22½	S. 18 E.	.17
		Autumn	2349	4097	1690	2477	2052	5647	3585	7321	529	N. 67 44 W.	.23	N. 14 E.	.03½
		Winter	2369	4066	1373	1515	1110	4510	4390	8897	369	N. 54 15 W.	.37	N. 26 W.	.18½
		The year	8347	15436	6588	10516	9443	23136	14246	28179	1698	N. 76 53 W.	.22		

[1] Computed from the resultants for the seasons.

(Nos. 274 to 277.)

Northern New Hampshire.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Barnstead,	R. F. Hanscom & C. H. Pitman,	10	6	1856, 1857 and 1860 to 1869 inclusive.
Dartmouth College,	E. Adams, Jr.,	2	11	1834, 1835, 1836 and 1854.
Littleton,	Robert C. Whiting,	1	2	1863 and 1864.
Mt. Washington,	(See White Mountains below),			
North Littleton,	Rufus Smith,	1	6	1860, 1863 and 1864.
Salmon Falls,	George B. Sawyer,	1	1	1854 and 1855.
Shelburne,	Fletcher Odell,	9	11	1856 to 1869 inclusive.
Stratford,	B. Gould Brown and Branch Brown,	12	4	1855 to 1857, and 1860 to 1869, both inclusive.
West Enfield,	Nathaniel Purmont,	2	4	1856, 1857 and 1858.
Whitefield,	L. D. Kidder,	0	7	1869.
White Mountains,	Prof. C. H. Hitchcock, J. H. Huntington, S. A. Nelson and Theodore Smith,	2	2	November, 1870, to December, 1871, inclusive; and October, 1872, to September, 1873, inclusive.

	Place and kind of observations.	Time of the year.	North.	N. N. E.	N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio.	Monsoon influences. Direction.	Force.
274. Mount Washington, 1870–71.	No. of observations at 7 A. M.	Spring	3	0	0	1	0	3	2	1	7	15	7	24	4	19	4	...				
		Summer	2	0	0	0	0	3	0	2	3	9	0	12	0	51	2	...				
		Autumn	11	0	3	2	0	0	0	5	0	6	0	21	0	55	0	...				
		Winter	12	0	0	1	0	0	2	11	4	16	1	36	3	28	4	...				
	No. of observations at 2 P. M.	Spring	1	0	1	0	1	2	1	3	7	19	7	26	6	14	3	...				
		Summer	3	0	0	0	0	3	1	1	3	17	0	9	0	52	0	...				
		Autumn	9	0	3	1	0	1	0	4	0	8	0	17	0	61	0	...				
		Winter	10	0	0	1	1	2	0	5	4	27	3	33	2	32	0	...				
	No. of observations at 9 P. M.	Spring	3	0	1	1	0	2	0	2	5	9	8	22	8	18	6	...				
		Summer	2	0	0	0	0	3	0	0	0	16	0	11	0	50	5	...				
		Autumn	10	0	2	1	0	1	0	2	0	11	0	12	0	65	0	...				
		Winter	8	1	0	0	0	0	2	8	9	15	6	24	6	33	5	...				
	Aggregate No. of observations.	Spring	7	0	2	2	1	7	3	6	19	43	22	72	18	51	13	...	S. 87° 42′ W.	.67	S. 11° W.	22
		Summer	7	0	0	0	0	9	1	3	6	42	0	32	0	153	7	...	N. 65 39 W.	.71	N. 5 W.	.11
		Autumn	30	0	8	4	0	2	0	11	0	25	0	50	0	181	0	...	N. 54 7 W.	.73	N. 10 E.	.24
		Winter	30	1	0	2	1	2	4	24	17	58	10	93	11	93	9	...	N. 85 5 W.	.63	S. 2½ E.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 72 59 W.	.66		
	No. of miles.	Spring	197	0	27	9	38	199	163	147	722	1656	617	2015	1110	1453	439	...	S. 85 9 W.	.68½	S. 5½ W.	.29
		Summer	88	0	0	21	0	157	0	72	72	741	0	499	0	3716	189	...	N. 59 40 W.	.75½	N. 2½ E.	.14
		Autumn	1148	0	364	282	0	69	0	384	0	1167	0	1378	0	6212	0	...	N. 53 4 W.	.83	North.	.25
		Winter	1251	1	0	71	0	32	179	1071	816	1816	422	4019	305	4953	566	...	N. 78 52 W.	.65	S. 10 E.	.11
		The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 13 W.	.70		
	Average velocity in miles per hour.	Spring	28.1	0	13.5	4.5	38	28.4	54.3	24.5	38	38.5	28	27.9	61.6	28.4	33.7	...				
		Summer	12.5	0	0	0	0	17.4	0	24	12	17.6	0	15.5	0	24.2	27	...				
		Autumn	38.2	0	43	70.5	0	39.5	0	34.9	0	46.6	0	27.5	0	34.3	0	...				
		Winter	41.7	1	0	35.5	0	16.	44.7	44.6	48	31.3	42.2	43.2	27.7	53.2	62.8	...				
274(a). Mount Washington.	No. of observations, 1872–3.	January	6	...	1	0	...	2	...	6	...	28	...	38	...	11	...	1				
		February	2	...	6	0	...	7	...	4	...	11	...	32	...	21	...	1				
		March	0	...	2	0	...	6	...	7	...	15	...	35	...	28	...	0				
		April	7	...	2	3	...	8	...	4	...	5	...	45	...	14	...	2				
		May	13	...	0	3	...	3	...	6	...	4	...	39	...	23	...	2				
		June	5	...	8	3	...	1	...	1	...	5	...	18	...	41	...	8				
		July	4	...	0	4	...	6	...	7	...	13	...	21	...	34	...	4				
		August	10	...	4	2	...	9	...	0	...	3	...	17	...	42	...	6				
		September	1	...	0	0	...	1	...	0	...	14	...	9	...	62	...	3				
		October	11	...	14	2	...	2	...	1	...	17	...	22	...	18	...	6				
		November	1	...	5	0	...	14	...	2	..	15	...	34	...	17	...	2				
		December	5	...	4	2	...	11	...	6	...	6	...	35	...	21	...	3				
		Spring	20	...	4	6	...	17	...	17	...	24	...	119	...	65	...	4	N. 81 57 W.	.59		
		Summer	19	...	12	9	...	16	...	8	...	21	...	56	...	117	...	18	N. 58 39 W.	.53		
		Autumn	13	...	19	2	...	17	...	3	...	46	...	65	...	97	...	11	N. 71 6 W.	.53		
		Winter	13	...	11	2	...	20	...	16	...	45	...	105	...	53	...	5	S. 88 35 W.	.56		
		The year	65	...	46	19	...	70	...	44	...	136	...	345	...	332	...	38	N. 76 4 W.	.54		
	No. of observations, 1870–3.	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 15 W.	.62	S. 16½ W.	.13
		Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 62 45 W.	.62	N. 11½ E.	.13
		Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 15 W.	.62	N. 14 E.	.14
		Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 88 55 W.	.60	S. 6 W.	.15
		The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 30 W.	.60		

[1] Computed from the resultants for the seasons.

(Nos. 275 to 277.) **Northern New Hampshire.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
275. Hanover.[1]		The year	423	143	71	310	326	705	313	966	...	N. 81° 34′ W.	.34		
276. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2]	No. of observations.	Spring	75	157	88	117	139	214	216	575	...	N. 65 57 W.	.333	N. 47° E.	.05
		Summer	79	73	189	171	175	269	316	491	...	S. 89 2 W.	.261	S. 35 E.	.13
		Autumn	56	84	88	119	116	268	368	599	...	N. 78 44 W.	.427	S. 76 W.	.05
		Winter	106	153	110	84	112	140	440	601	...	N. 61 45 W.	.429	N. 21½ W.	.11
		The year[3]	...	...	...	...	...	...	...	...	...	N. 72 58 W.	.356		
	No. of miles.	Spring	387	2108	642	890	834	1210	1530	5300	...	N. 45 33 W.	.356	N. 50 E.	.12
		Summer	363	641	1027	1113	1150	1620	1993	3371	...	N. 87 56 W.	.281	S. 21 E.	.17
		Autumn	265	750	423	912	805	1334	2144	4376	...	N. 71 55 W.	.416	S. 52 W.	.07
		Winter	673	1464	927	507	793	614	5004	5565	...	N. 60 5 W.	.503	N. 49 W.	.12
		The year[3]	...	...	...	...	...	...	...	...	...	N. 63 23 W.	.385		
	M'n vel. in miles p.h'r.	Spring	5.16	13.43	7.30	7.69	6.00	5.65	7.08	9.22					
		Summer	4.50	8.78	5.43	6.51	6.57	6.02	6.31	6.87					
		Autumn	4.73	8.93	4.81	7.66	6.94	4.98	5.83	7.31					
		Winter	6.35	9.57	8.43	6.04	7.06	4.39	11.37	9.26					
277. Aggregate number of observations at all stations.	Surface winds.	Spring	290	1106	1314	445	622	1006	3297	1782	1185	N. 76 32 W.	.26½		
		Summer	285	771	1218	582	800	1206	2905	1516	1232	S. 86 30 W.	.25½		
		Autumn	266	756	1162	445	539	1079	3259	1781	1487	N. 82 5 W.	.30½		
		Winter	309	820	1028	296	564	835	3999	1830	1434	N. 79 34 W.	.37		
		The year	1150	3453	4722	1768	2525	4126	13460	6909	5338	N. 82 28 W.	.30		
	Motion of clouds.	Spring	103	151	114	194	140	290	1117	778	...	N. 79 37 W.	.53½	N. 57 E.	.05
		Summer	116	97	133	238	184	504	1222	865	...	N. 87 15 W.	.54	S. 33 E.	.05
		Autumn	94	91	113	189	154	468	1428	918	...	N. 84 51 W.	.61	S. 74 W.	.05
		Winter	62	90	69	177	116	273	1152	826	...	N. 80 38 W.	.61	N. 52 W.	.05
		The year[3]	...	...	...	...	...	...	...	...	...	N. 83 6 W.	.57		
	2 preceding combined.	Spring	393	1257	1428	639	762	1296	4414	2560	1185	N. 77 36 W.	.32	N. 52 E.	.05
		Summer	401	868	1351	820	984	1710	4127	2381	1232	S. 89 3 W.	.32½	S. 30 E.	.05½
		Autumn	360	847	1275	634	693	1547	4687	2699	1487	N. 83 17 W.	.38	N. 83 W.	.01
		Winter	371	910	1097	473	680	1108	5151	2656	1434	N. 82 49 W.	.38½	N. 74 W.	.03½
		The year	1525	3882	5151	2566	3119	5661	18379	10296	5338	N. 82 32 W.	.36		

[1] Number of days, 1096.

[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.16	6.39	6.48	8.91	7.48
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.72	1.67	2.77	3.82	2.66
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	2.91	1.80	2.70	4.48	2.88
Excess of the latter over the former	+.19	+.13	—.07	+.06	+.22

[3] Computed from the resultants for the seasons.

(Nos. 278 to 281.) **Southern New Hampshire.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Claremont,	F. N. Freeman and others,[1]	9	2	1857 and 1860 to 1869 inclusive.
Charlestown,	....	0	7	1843 and 1844.
Concord,	William Prescott & others,[2]	7	0	1854 to 1858 and 1865 to 1869 both inclusive.
Dover,	A. A. Tufts,	7	0	1835 to 1842.
Dublin,	Rev. L. W. Leonard,	1	0	1852.
Dunbarton,	Alfred Colby,	1	10	1868 and 1869.
Exeter,	Rev. L. W. Leonard and Rev. E. Nason,	8	0	1854, 1855 and 1861 to 1865 inclusive.

[1] Arthur Chase, Stephen O. Mead and Linus Stevens.

[2] H. E. Sawyer, E. P. Colby, John T. Wheeler and James C. Knox.

(Nos. 278 to 280.) **Southern New Hampshire.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Farmington,	Louis Bell,	0	1	1861.
Fort Constitution,	Post Surgeon,	20	11	1827 to 1839, 1842 to 1845 and 1849 to 1853, all inclusive.
Francestown,	M. N. Root & A. H. Bixby,	1	3	1857 [two independent records].
Great Falls,	Henry E. Sawyer,	1	6	1855 and 1856.
Isle of Shoals,	Thomas B. Laighton,	0	3	1849.
Keene,	Mr. Wheelock,	0	5	1843.
Londonderry,	Robert C. Mack,	2	5	1854, 1855 and 1856.
London Ridge,	Isaac S. French, M.D.,	1	0	1862 and 1863.
Manchester,	Hon. S. N. Bell,	5	3	1854 to 1857 inclusive, 1860 and 1861.
Peterborough,	Mr. Youngman,	0	1	1843.
Portsmouth,	John Hatch,	1	8	1866, 1867 and 1868.
Stratham,	Andrew Wiggins,	0	4	1860.
Tamworth,	Alfred Brewster,	0	5	1867 and 1869.
White Island,	…………………	0	1	1843.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
278. Fort Constitution.	January	185	140	66	21	81	129	275	422	…					
	February	177	108	43	21	105	143	265	337	…					
	March	158	139	103	46	178	82	295	305	…					
	April	97	208	147	64	207	96	163	262	…					
	May	86	156	142	89	300	132	214	186	…					
	June	48	119	81	59	348	153	236	207	…					
	July	98	86	69	63	447	187	265	208	…					
	August	104	147	102	93	423	133	215	179	…					
	September	165	132	106	63	283	132	183	230	…					
	October	144	121	88	56	194	150	181	255	…					
	November	198	89	73	33	87	99	225	326	…					
	December	179	137	52	15	57	135	290	336	…					
	Spring	341	503	392	199	685	310	672	753	…	N. 71° 0′ W.	.15			
	Summer	250	352	252	215	1218	473	716	594	…	S. 46 8 W.	.28			
	Autumn	507	342	267	152	564	381	589	811	…	N. 64 55 W.	.25			
	Winter	541	385	161	57	243	407	830	1095	…	N. 54 23 W.	.47			
	The year[2]	…	…	…	…	…	…	…	…	…	N. 75 59 W.	.24			
279. Dover.	The year	19	426	46	388	21	518	163	610	…	N. 75 18 W.	.16½	………	…	2191
280. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	195	416	181	410	177	650	379	1211	…	N. 65 45 W.	.265			
	Summer	124	301	231	574	226	800	463	751	…	S. 65 6 W.	.212			
	Autumn	183	341	149	504	167	692	511	1191	…	N. 76 58 W.	.282			
	Winter	267	489	76	185	99	467	482	1773	…	N. 49 12 W.	.489			
	The year[2]	…	…	…	…	…	…	…	…	…	N. 69 31 W.	.288			
No. of miles.	Spring	1291	3623	1401	2413	677	3559	2798	12344	…	N. 47 28 W.	.381			
	Summer	569	1617	1073	2709	1117	4739	2383	5123	…	S. 78 39 W.	.259			
	Autumn	1125	2049	969	2909	800	3608	2922	9440	…	N. 63 25 W.	.339			
	Winter	1741	4115	635	1311	312	2790	3798	14930	…	N. 44 40 W.	.534			
	The year[2]	…	…	…	…	…	…	…	…	…	N. 56 18 W.	.369			
M'n vel. in miles p. h'r.	Spring	6.62	8.71	7.74	5.89	3.89	5.48	7.38	10.19						
	Summer	4.59	5.37	4.65	4.72	4.94	5.92	5.15	6.82						
	Autumn	6.15	6.01	6.50	5.77	4.79	5.21	5.72	7.93						
	Winter	6.52	8.42	8.36	7.09	3.15	5.97	7.88	8.42						

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.77	5.57	6.37	7.72	6.86
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.06	1.18	1.80	3.77	1.97
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.96	1.44	2.16	4.12	2.53
Excess of the latter over the former	+.90	+.26	+.36	+.35	+.56

[2] Computed from the resultants for the seasons.

(No. 281.) **Southern New Hampshire.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
281. Aggregate number of observations at all stations.	Surface winds.	Spring	1089	1977	1312	1641	1505	2086	2422	4497	278	N. 65° 7′ W.	.20½		
		Summer	770	1247	1002	1631	2174	2788	2368	2885	286	S. 64 20 W.	.24		
		Autumn	1310	1372	966	1500	1304	2251	2275	4183	287	N. 63 17 W.	.28		
		Winter	1544	1700	575	834	759	2004	2771	5742	320	N. 55 30 W.	.49		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 72 8 W.	.28		
	Motion of clouds.	Spring	247	214	208	254	173	393	905	685	...	N. 77 24 W.	.37½	N. 57° E.	.04
		Summer	163	160	187	338	215	500	1028	418	...	S. 78 18 W.	.38½	S. 12½ E.	.14
		Autumn	275	162	155	293	237	439	988	581	...	N. 87 52 W.	.40	S. 8 E.	.04
		Winter	380	206	79	106	103	308	978	661	...	N. 66 21 W.	.52½	N. 27 W.	.17
		The year[1]	...	...	...	...	...	...	...	...	...	N. 81 58 W.	.40½		
	Two preceding combined.	Spring	1336	2191	1520	1895	1678	2479	3327	5182	278	N. 67 35 W.	.23½	N. 85 E.	.07½
		Summer	933	1407	1189	1969	2389	3288	3396	3303	286	S. 67 38 W.	.26½	S. 13 E.	.19
		Autumn	1585	1534	1121	1793	1541	2690	3263	4764	287	N. 75 18 W.	.28	S. 55 E.	.02
		Winter	1924	1906	654	940	862	2312	3749	6403	320	N. 57 23 W.	.49½	N. 34 W.	.22½
		The year[1]	...	...	...	...	...	...	...	...	...	N. 74 9 W.	.30		

[1] Computed from the resultants for the seasons.

(Nos. 282 to 289.) **Rhode Island.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Acquidneset,	E. G. Arnold,	0	4	1856.
Brown University,	Alexis Caswell, LL.D.,	21	0	1832, 1833, 1834, 1838 and 1847 to 1867 inclusive, except 1860.
Fort Adams,	Post Surgeon,	11	11	1842 to 1846, 1848 to 1853 and 1857 to 1859, all inclusive.
Fort Wolcott,	Post Surgeon,	14	0	1822 to 1835 inclusive.
Little Compton,	....	0	3	1843 and 1849.
Newport,	William H. Crandall,	4	3	1865 to 1869 inclusive.
North Scituate,	Henry C. Sheldon,	0	7	1854.
Point Judith,	Mr. Hadwer,	0	1	March, 1845.
Providence,	H. C. Sheldon & Friends' School,	4	9	1837, 1838, 1842 and 1861 to 1864 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
282. Fort Wolcott.	January	44	56	9	22	12	99	46	146						
	February	23	51	9	22	7	93	40	150						
	March	40	52	11	45	19	105	33	130						
	April	23	85	12	55	12	130	20	83						
	May	24	53	10	65	15	173	21	73						
	June	14	41	9	46	22	213	14	61						
	July	18	34	6	42	25	246	15	48						
	August	19	60	8	54	24	209	9	51						
	September	27	79	8	51	18	149	14	67						
	October	37	63	8	35	19	143	25	104						
	November	31	52	8	19	11	117	45	137						
	December	42	61	4	20	10	98	54	145						
	Spring	87	190	33	165	46	408	74	286	...	S. 84° 24′ W.	.22	S. 89° E.	.08	
	Summer	51	135	23	142	71	668	38	160	...	S. 46 30 W.	.43	S. 2½ W.	.27	
	Autumn	95	194	24	105	48	409	84	308	...	N. 83 49 W.	.28	N. 24 E.	.05	
	Winter	109	168	22	64	29	290	140	441	...	N. 61 4 W.	.42½	N. 18 W.	.24	
	The year	342	687	102	476	194	1775	336	1195	...	S. 85 44 W.	.29½			

(Nos. 283 to 288.) **Rhode Island.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
283. Fort Adams.	January	264	174	78	64	81	146	220	395						
	February	176	129	92	94	56	166	235	276						
	March	178	164	117	98	141	181	231	277						
	April	128	194	143	125	162	203	225	119						
	May	123	149	155	159	241	236	183	106						
	June	67	95	62	111	254	380	185	120						
	July	136	88	56	82	300	306	249	144						
	August	149	127	155	171	236	255	193	132						
	September	210	148	110	93	224	217	176	197						
	October	147	196	110	114	142	175	213	176						
	November	231	143	83	58	80	131	226	242						
	December	168	156	45	58	74	91	227	309						
	Spring	429	507	415	382	544	620	639	502	...	S. 75° 30′ W.	.10			
	Summer	352	310	273	364	790	941	627	396	...	S. 43 41 W.	.29			
	Autumn	588	487	303	265	446	523	615	615	...	N. 58 10 W.	.18			
	Winter	608	459	215	216	211	403	682	980	...	N. 44 44 W.	.36½			
	The year	1977	1763	1206	1227	1991	2487	2563	2493	...	N. 82 23 W.	.18			
284. Brown University, Providence 1832, '33, '34 & '38.	The year	21	213	51	42	75	273	459	228	...	N. 86 33 W.	.43	....	...	1461
285. Brown University, Providence 1832–1859 inclusive.	The year	...	2069	...	823	...	3405	...	3842	...	N. 78 52 W.	.32	....	...	10135
286. Friends' School, Providence	The year	194	190	69	83	287	388	235	543	...	N. 81 35 W.	.32	....	...	910
287. Newport.	The year	30	114	9	94	10	407	50	319	...	S. 86 3 W.	.39½			
288. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	60	236	39	77	146	292	64	407	...	N. 70 7 W.	.238	S. 80° E.	.09	
	Summer	24	121	19	55	86	226	60	164	...	S. 72 54 W.	.264	S. 18½ E.	.18	
	Autumn	39	113	17	25	51	229	49	258	...	N. 75 46 W.	.365	S. 81 W.	.04	
	Winter	42	147	13	23	40	186	72	464	...	N. 54 18 W.	.495	N. 26½ W.	.21	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 72 46 W.	.323			
No. of miles.	Spring	319	2069	148	378	609	1682	377	2796	...	N. 44 31 W.	.282	N. 46 E.	.14	
	Summer	132	510	58	401	327	1255	257	628	...	S. 57 39 W.	.293	S. 10 E.	.26	
	Autumn	147	423	62	172	174	906	174	877	...	N. 82 14 W.	.324	S. 25 W.	.06	
	Winter	179	690	119	102	163	866	439	2494	...	N. 53 28 W.	.523	N. 31 W.	.24	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 68 18 W.	.313			
M'n vel. in miles p.h'r.	Spring	5.32	8.77	3.79	4.91	4.17	5.76	5.89	6.87	...					
	Summer	5.50	4.21	3.05	7.29	3.80	5.55	4.28	3.83	...					
	Autumn	3.77	3.74	3.65	6.88	3.41	3.96	3.55	3.40	...					
	Winter	4.26	4.69	9.15	4.43	4.07	4.66	6.10	5.37	...					

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.34	4.72	3.76	5.12	4.98
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.51	1.25	1.37	2.53	1.61
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.79	1.38	1.22	2.68	1.56
Excess of the latter over the former	+.28	+.13	—.15	+.15	—.05

[2] Computed from the resultants for the seasons.

(No. 289.) **Rhode Island.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
289. Aggregate number of observations at all stations.	Surface winds.	Spring	918	1801	596	1005	1220	2239	1102	2520	13	N. 78° 28′ W.	.17			
		Summer	687	1162	428	941	1472	3152	947	1458	36	S. 51 18 W.	.28½			
		Autumn	1125	1545	453	698	829	2313	1055	2552	27	N. 66 35 W.	.25			
		Winter	1140	1293	344	498	465	1577	1333	3406	8	N. 41 36 W.	.33½			
		The year[1]	...	...	...	...	...	...	...	...	...	N. 76 5 W.	.22			
	Motion of clouds.	Spring	71	108	23	84	50	174	59	116	...	S. 88 21 W.	.15½	N. 2½° W.	.01	
		Summer	74	73	37	65	57	206	64	55	...	S. 53 34 W.	.22½	S. 15 W.	.14	
		Autumn	65	129	27	97	31	174	36	99	...	N. 85 9 W.	.06½	N. 83 E.	.08	
		Winter	84	88	31	60	39	116	71	126	...	N. 55 59 W.	.21	N. 13½ W.	.12	
		The year[1]	...	...	...	...	...	...	...	...	...	S. 88 30 W.	.14½			
	2 preceding combined.	Spring	989	1909	619	1089	1270	2413	1161	2636	13	N. 77 6 W.	.17	S. 71 E.	.03	
		Summer	761	1235	465	1006	1529	3358	1011	1513	36	S. 51 34 W.	.28	S. 18 E.	.10	
		Autumn	1190	1674	480	795	860	2487	1091	2651	27	N. 66 52 W.	.24	N. 14½ E.	.04	
		Winter	1224	1381	375	558	504	1693	1404	3532	8	N. 52 11 W.	.40	N. 23 W.	.10	
		The year[1]	...	...	...	...	...	...	...	...	...	N. 77 39 W.	.23½			

[1] Computed from the resultants for the seasons.

(Nos. 290 to 296.) **Northeastern Massachusetts.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Andover,	....	0	1	1852.
Boston,	Mr. Paine and others,[1]	7	1	1828, 1831, 1832, 1834, 1836, 1855, 1856, 1857 and 1859.
Byfield,	Martin N. Root,	0	2	1850.
Cambridge,	President Webber & others,[2]	13	2	1791 to 1798, 1841, 1842, 1856 to 1859 inclusive, 1865 and 1866.
Chelsea,	Naval Hospital,	0	6	1865.
Clinton,	George M. Morse, M.D.,	0	9	1860 and 1861.
Fitchburg,	George Raymond,	1	0	1861.
Fort Independence,	Post Surgeon,	11	10	1831, 1832, 1834, 1836 and 1851 to 1859 inclusive.
Framingham,	G. A. Hyde,	1	0	1843, 1844 and 1845.
Georgetown,	Henry M. and S. A. Nelson,	3	9	1865 to 1869 inclusive.
Ipswich,	Rev. Manasseh Cutler,	1	0	1781.
Lawrence,	John Fallon,	10	8	1857 to 1869 inclusive, except 1860.
Lowell,	Charles W. Gilliss,	1	2	1849 and 1850.
Lunenburg,	Geo. A. Cunningham,	3	5	1866 to 1869 inclusive.
Lynn,	Jacob Batchelder,	1	0	1852.
Medfield,	....	0	2	1843.
Newbury,	John H. Caldwell,	4	10	1864 to 1869 inclusive.
Newburyport,	Dr. H. C. Perkins,	5	4	1843 and 1854 to 1857 inclusive.
North Bellerica,	Rev. Elias Nason,	3	11	1866 to 1869 inclusive.
Princeton,	Hon. John Brooks,	3	6	1854 to 1857 inclusive.
Roxbury,	Benjamin Kent,	0	9	1849.
Topsfield,	Nathan W. Brown & others,[3]	8	9	1860 to 1869 inclusive.
Waltham,	Mr. Fisk,	1	0	1838.
Watertown,	....	1	0	1843.
West Newton,	John H. Bixby,	2	8	1867, 1868 and 1869.
Weymouth,	Dr. N. Q. Tirrell,	1	7	1856 and 1857.
Worcester,	Lunatic Hospital,	27	11	1840 to 1869 inclusive, except 1860.

[1] E. L. Smith, E. L. Adams and others.
[2] Prof. Farrar, Harvard College Observatory and A. Fendler.
[3] John H. Caldwell and Arthur M. and Sidney A. Merriam.

(Nos. 290 to 296.) **Northeastern Massachusetts.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
290. Worcester, 1840 to 1853 inclusive.	Spring	105	165	25	93	53	205	132	393	...	N. 55° 50′ W.	.36			
	Summer	59	109	26	96	93	351	128	308	...	S. 82 34 W.	.36½			
	Autumn	91	162	25	65	68	230	139	475	...	N. 61 30 W.	.39			
	Winter	119	110	24	34	48	217	148	457	...	N. 59 27 W.	.50			
	The year	374	546	100	288	262	1003	547	1573	...	N. 67 26 W.	.39			
291. Waltham.	The year	46	33	25	7	13	118	55	131	21	N. 71 34 W.?[3]	.39	....	...	365
292. Boston.	The year	12	83	53	28	31	165	41	142	...	N. 88 20 W.	.25	....	...	494
293. Fort Independence.	Spring	142	521	196	295	87	536	245	526	...	N. 46 57 W.	.12			
	Summer	161	572	277	423	295	773	321	345	...	S. 26 39 W.	.15			
	Autumn	291	428	171	223	120	666	371	522	...	N. 69 44 W.	.22			
	Winter	348	328	71	169	87	425	295	698	...	N. 49 39 W.	.36			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 67 43 W.	.17			
294. Ipswich.	The year	42	59	22	25	16	108	83	152	1	N. 66 55 W.?[3]	.41	....	...	365
295. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	115	415	135	164	88	440	409	652	...	N. 60° 54′ W.	.290	N. 55° E.	.08	
	Summer	62	265	186	213	62	572	438	379	...	S. 80 21 W.	.256	S. 26 E.	.15	
	Autumn	101	251	159	143	109	541	613	600	...	N. 83 36 W.	.373	S. 44 W.	.07	
	Winter	111	281	122	84	52	341	497	885	...	N. 59 21 W.	.471	N. 30 W.	.17	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 73 30 W.	.334			
No. of miles.	Spring	985	3645.25	609	628	581	2264	1910	4929	..	N. 37 17 W.	.344	N. 48½ E.	.14	
	Summer	257	1088	541	830	390	2586	1434	1567	...	S. 74 49 W.	.276	S. 10 E.	.26	
	Autumn	427	1362	552	582	600	2449	2573	3015	...	N. 80 12 W.	.377	S. 27 W.	.13	
	Winter	614	2155.5	469	400	367	1536	2469	6654.5	...	N. 49 31 W.	.524	N. 29 W.	.13	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 59 32 W.	.361			
M'n vel. in miles p. h'r.	Spring	8.57	8.78	4.51	3.83	6.60	5.15	4.67	7.56						
	Summer	4.15	4.11	2.91	3.90	6.29	4.52	3.30	4.13						
	Autumn	4.23	5.43	3.47	4.07	5.50	4.53	4.20	5.02						
	Winter	5.53	7.67	3.84	4.76	7.06	4.50	4.97	7.52						
296. Aggregate number of observations at all stations. Surface winds.	Spring	1612	4153	2333	2128	1610	4558	3934	6403	255	N. 60 51 W.	.22			
	Summer	1089	3221	2373	2605	2372	7633	4069	4612	421	S. 64 14 W.	.24			
	Autumn	1966	3460	1762	1901	1560	5712	4536	6807	401	N. 71 58 W.	.29½			
	Winter	2244	3255	896	1062	1056	4504	4980	8653	272	N. 61 14 W.	.44			
	The year	6911	14029	7364	7696	6598	22407	17519	26475	1349	N. 75 22 W.	.27½			
Motion of clouds.	Spring	211	556	322	162	179	629	948	702	...	N. 71 0 W.	.30	N. 75 E.	.09	
	Summer	238	479	308	204	179	1080	1189	647	...	S. 88 8 W.	.37½	S. 2 W.	.09	
	Autumn	187	502	234	113	179	797	1123	684	...	N. 82 17 W.	.39½	S. 37½ W.	.03	
	Winter	157	433	131	98	91	528	1006	847	...	N. 70 15 W.	.47½	N. 41 W.	.11	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 41 W.	.38			
2 preceding combined.	Spring	1823	4709	2655	2290	1789	5187	4882	7105	255	N. 62 33 W.	.22	N. 71½ E.	.09	
	Summer	1327	3700	2181	2809	2551	8713	5258	5259	421	S. 68 52 W.	.26	S. 13½ E.	.17	
	Autumn	2153	3902	1996	2014	1739	6509	5659	7491	401	N. 75 24 W.	.30½	N. 72 W.	.01½	
	Winter	2401	3688	1027	1160	1147	5032	5986	9500	272	N. 62 18 W.	.44	N. 39 W.	.17	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 75 28 W.	.29			

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.43	3.99	4.59	6.18	5.30
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.86	1.02	1.71	2.91	1.77
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.21	1.10	1.73	3.24	1.91
Excess of the latter over the former	+.35	+.08	+.02	+.33	+.14

[2] Computed from the resultants for the seasons.

[3] Computed from observations recorded from 16 points.

(Nos. 297 to 300.) **Southeastern Massachusetts.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bridgewater,	L. A. Darling and others,[1]	3	2	1856 to 1859 inclusive, and 1861.
Canton,	D. H. Ellis,	0	7	1856, 1857 and 1858.
Dartmouth,	Mr. Bailey,	0	8	1843 and 1844.
Duxbury,	James Ritchie,	0	3	1849.
East Douglass,	....	0	6	1849.
Fall River,	Charles C. Terry,	0	3	1861.
Grafton,	Rev. Wm. G. Scandlin,	1	2	1860 and 1861.
Kingston,	Guilford S. Newcomb,	2	10	1866 to 1869 inclusive.
Mendon,	George Metcalf and others,[2]	26	0	1841 to 1850 and 1854 to 1869 both inclusive, except 1859.
Milton,	Rev. A. K. Teele,	2	8	1867, 1868 and 1869.
New Bedford,	Samuel Rodman and others,[3]	31	10	1818 to 1833 and 1854 to 1869 both inclusive except 1860.
North Attleboro,	Henry Rice,	4	3	1852 and 1854 to 1857 inclusive.
Taunton,	Albert Schlegel,	0	10	1854 and 1855.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
297. Mendon.		The year	9	298	49	86	43	780	59	497	...	S. 82° 31′ W.	.35½	....	...	1826
298. New Bedford.		The year	274	524	525	500	467	1454	727	1372	....	S. 81 0 W.	.26	....	...	5644
299. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[4]	No. of observat'ns.	Spring	270	567	119	230	375	1038	328	871	...	N. 89 7 W.	.261	S. 85° E.	.07	
		Summer	141	400	134	227	320	1325	290	562	...	S. 60 20 W.	.352	S. 6 E.	.18	
		Autumn	290	401	100	191	313	1050	385	993	...	N. 86 17 W.	.351	N. 58 W.	.02½	
		Winter	338	409	122	151	208	820	515	1365	...	N. 65 39 W.	.427	N. 22 W.	.17	
		The year[5]	...	...	...	...	...	...	...	...	...	N. 88 45 W.	.327			
	No. of miles.	Spring	1927	6048	842	1188	1776	6448.5	2652	8452	...	N. 55 19 W.	.298	N. 32½ E.	.12	
		Summer	519	2285	597	886	1445	8171	10585	2914	...	S. 58 54 W.	.393	S. 6 W.	.27	
		Autumn	1526	2671	615	1474	1858	7312	2261	5564.5	...	S. 83 38 W.	.279	S. 19 E.	.10	
		Winter	2040.5	3137	861	1286	1056	4557	3977	1122.0	...	N. 57 31 W.	.463	N. 23½ W.	.20	
		The year[5]	...	...	...	...	...	...	...	...	...	N. 77 32 W.	.318			
	M'n vel. in miles p.h'r.	Spring	7.14	10.67	7.08	5.17	4.74	6.21	8.09	9.70						
		Summer	3.68	5.71	4.46	3.90	4.52	6.17	3.65	5.19						
		Autumn	5.26	6.66	6.15	7.72	5.94	6.96	5.87	5.60						
		Winter	6.04	7.67	7.06	8.52	5.08	5.56	7.72	8.22						
300. Aggregate number of observations at all stations.	Surface winds.	Spring	795	2918	751	1074	1088	4691	1235	3480	266	N. 87 26 W.	.21			
		Summer	488	2191	648	1060	994	6974	1161	2295	245	S. 57 39 W.	.35			
		Autumn	893	2162	627	938	885	4688	1412	4117	283	N. 84 26 W.	.30			
		Winter	954	1815	504	717	666	4006	1782	5195	238	N. 72 22 W.	.39½			
		The year	3130	9086	2530	3789	3633	20359	5590	15087	1032	S. 88 32 W.	.30			
	Motion of clouds.	Spring	261	682	175	192	284	1152	750	957	...	N. 82 42 W.	.33	N. 65 E.	.06	
		Summer	252	534	149	186	270	1399	742	759	...	S. 82 4 W.	.38	S. 1½ E.	.07	
		Autumn	223	462	126	184	271	1146	672	924	...	S. 89 42 W.	.40½	S. 57 E.	.03	
		Winter	213	455	151	151	146	938	672	957	...	N. 78 20 W.	.40	N. 8 W.	.06	
		The year[5]	...	...	...	...	...	...	...	...	...	N. 87 24 W.	.37½			
	2 preceding combined.	Spring	1056	3600	926	1266	1372	5843	1985	4437	266	N. 86 1 W.	.23½	N. 81° E.	.10½	
		Summer	740	2725	797	1246	1264	8373	1903	3054	245	S. 63 3 W.	.35	S. 9 E.	.16	
		Autumn	1116	2624	753	1122	1156	5834	2084	5041	283	N. 85 52 W.	.32	N. 29 E.	.03	
		Winter	1167	2270	655	868	812	4944	2454	6152	238	N. 76 52 W.	.49½	N. 51 W.	.18½	
		The year	4079	11219	3131	4502	4604	24994	8426	18684	1032	S. 89 27 W.	.32			

[1] C. W. Felt and others and Normal School. [2] Dr. John G. Metcalf and Henry Rice.
[3] Thomas Bailey and Edward T. Tucker.
[4] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.72	5.26	6.25	7.16	6.60
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.01	1.85	2.19	3.06	2.16
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.30	2.07	1.74	3.32	2.10
Excess of the latter over the former	+.29	+.22	—.45	+.26	—.06

[5] Computed from the resultants for the seasons.

(Nos. 301 to 303.) **Cape Cod and adjacent Islands.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Barnstable,	B. R. Gifford,	0	5	1853 and 1854.
Edgartown,	....	0	1	1844.
Falmouth,	B. R. Gifford,	0	2	1863.
Nantucket,	Hon. William Mitchell,	10	3	1838, 1840 to 1842 and 1854 to 1860 all inclusive.
North Yarmouth,	Mr. Bailey,	0	1	1843.
Provincetown,	Mr. Graham,	0	2	1833 and 1834.
Race Point,	Mr. Graham,	0	8	1833 and 1834.
Truro,	....	0	2	1853.
West Dennis,	Eugene Tappan,	0	2	1864 and 1866.
Wood's Hole,	B. R. Gifford,	0	9	1853 and 1855.

Place of Observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
301. Nantucket.	January	6	8	18	6	4	8	8	6	11	14	20	12	25	25	44	22	N. 66° 45′ W.	.37	N. 51° W.	.15	155
	February	22	8	10	2	12	5	17	7	11	6	34	14	28	16	45	12	N. 75 9 W.	.31	N. 62 W.	.10	141
	March	22	13	25	8	17	8	9	3	12	9	30	8	11	6	63	23	N. 28 10 W.	.32	N. 19 E.	.24	124
	April	19	15	21	2	13	2	18	2	24	14	49	13	12	11	32	11	S. 82 53 W.	.20	S. 4½ W.	.08	120
	May	20	5	18	2	7	13	11	4	23	25	51	13	23	9	17	5	S. 51 59 W.	30	S. 1 W.	.24	155
	June	7	12	15	3	6	8	16	5	15	11	62	22	8	2	9	3	S. 35 59 W.	.34	S. 1 W.	.34	120
	July	17	7	15	1	5	3	5	4	18	9	63	27	11	4	19	9	S. 67 39 W.	.39	S. 37 W.	.25	155
	August	20	8	33	5	15	2	18	6	10	10	60	8	4	2	21	8	S. 60 47 W.	.07	S. 61 E.	.19	155
	September	24	15	51	10	12	1	18	5	19	8	36	12	14	5	26	11	N. 3 44 W.	.13	N. 70½ E.	.20	120
	October	21	5	31	8	4	2	15	8	12	8	50	7	25	10	44	11	N. 72 57 W.	.25	N. 33 W.	.04	124
	November	12	16	25	2	10	4	7	2	6	10	31	6	11	13	79	18	N. 43 52 W.	.41	N. 9 W.	.25	120
	December	15	7	11	4	9	11	15	7	3	3	28	7	23	8	63	19	N. 55 11 W.	.36	N. 30 W.	.18	124
	The year	205	119	273	53	114	67	157	59	164	127	514	149	195	121	462	152	N. 77 0 W.	.23	....	...	1613

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
302. Surface winds at Smithsonian Stations, in the years 1854, 1855, 1856 and 1857.[1]	No. of observations.	Spring	80	160	50	112	98	317	112	254	...	S. 84° 2′ W.	.219	S. 3° E.	.03
		Summer	36	189	30	100	90	425	73	63	...	S. 36 38 W.	.279	S. 13 E.	.23
		Autumn	75	178	33	105	59	272	70	201	...	N. 84 12 W.	.158	N. 78 E.	.06
		Winter	112	117	37	96	57	212	123	521	...	N. 57 34 W.	.405	N. 30 W.	.25
		The year[2]	...	...	...	...	...	...	...	...	...	N. 89 6 W.	.221		
	No. of miles.	Spring	1512	3355	1010	1212	970	4177	1520	4570	...	N. 56 2 W.	.215	S. 16 E.	.05
		Summer	280	2068	157	900	600	4091	682	398	...	S. 37 14 W.	.263	S. 11½ E.	.35
		Autumn	1146	2336	330	996	355	3316	821	3660	...	N. 57 13 W.	.257	N. 79 E.	.02
		Winter	1668	2403	451	1544	607	2308	1344	10424	...	N. 43 48 W.	.474	N. 25 W.	.23
		The year[2]	...	...	...	...	...	...	...	...	...	N. 59 20 W.	.267		
	M'n vel. in miles per hour.	Spring	18.90	20.97	20.20	10.82	9.90	13.18	13.57	17.99					
		Summer	7.78	10.94	5.23	9.00	6.67	9.63	9.34	6.32					
		Autumn	15.28	13.12	10.00	9.49	6.02	12.19	11.73	18.21					
		Winter	14.89	20.54	12.19	16.08	10.65	10.89	10.93	20.01					

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	15.49	9.12	13.05	16.27	13.48
Velocity in mean direction, on the supposition that all winds from every point of the compass move with the foregoing average velocity	3.39	2.54	2.06	6.59	2.98
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.33	2.40	3.36	7.72	3.60
Excess of the latter over the former	—.06	—.14	+1.30	+1.13	+.62

[2] Computed from the resultants for the seasons.

(No. 303.) **Cape Cod, etc.—*Continued.***

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
303. Aggregate number of observations at all stations.	Surface winds.	Spring	224	427	132	280	218	804	247	644	115	S. 89° 43′ W.	.21		
		Summer	122	466	85	238	200	1071	157	238	167	S. 45 14 W.	.26		
		Autumn	242	511	102	279	174	733	222	738	200	N. 68 37 W.	.20		
		Winter	250	371	101	278	137	565	313	1282	101	N. 57 6 W.	.37		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 84 11 W.	.22½		
	Motion of clouds.	Spring	0	0	0	0	0	0	0	0					
		Summer	0	0	0	0	0	0	0	0					
		Autumn	4	4	6	3	2	15	8	5	...	S. 68 43 W.	.25½		
		Winter	0	0	0	0	0	6	5	2	...	S. 75 8 W.	.85		
		The year[1]													
	2 preceding combined.	Spring	224	427	132	280	218	804	247	644	115	S. 89 43 W.	.21	S. 27½°E.	.02½
		Summer	122	466	85	238	200	1071	157	238	167	S. 45 14 W.	.26	S. 11 E.	.21
		Autumn	246	515	108	282	176	748	230	743	200	N. 69 20 W.	.20	N. 36 E.	.06½
		Winter	250	371	101	278	137	571	318	1284	101	N. 57 27 W.	.37	N. 26 W.	.20
		The year[1]	...	...	...	...	...	...	...	...	...	N. 84 31 W.	.22½		

[1] Computed from the resultants for the seasons.

(Nos. 304 to 309.) **Southwestern Maine.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time.		Date.
		yrs.	mos.	
Bath,	John Hayden,	10	7	January, 1832, to July, 1842, inclusive.
Bethel,	Rev. A. G. Gaines,	1	2	1861 and 1862.
Biddeford,	J. G. Garland & F. A. Small,	4	2	1848 to 1852 inclusive, and 1854.
Brunswick,	Prof. Parker Cleaveland,	50	6	1807 to 1859 inclusive.
Buxton,	....	0	1	1843.
Cape Small Point,	....	0	2	1849.
Cornish,	G. W. Guptill,	14	1	1856 to 1869 inclusive.
Cornishville,	Silas West,	12	6	1858 to 1869 inclusive.
East Wilton,	H. and L. Reynolds,	1	11	1861, 1862 and 1863.
Fort Preble,	Post Surgeon,	16	11	1827 to 1831, 1833 to 1835, 1841 to 1845 and 1849 to 1853, all inclusive.
Fryeburg,	G. B. Barrows,	2	5	1854, 1855 and 1856.
Gardiner,	Hon. R. & Rev. F. Gardiner,	14	7	1843 and 1855 to 1869 inclusive.
Kennebec Arsenal,	Post Surgeon,	1	4	1857 and 1858.
Lemington,	W. G. Lord,	1	6	1859, 1860 and 1861.
Lisbon,	Asa P. Moore,	10	0	1860 to 1869 inclusive.
Newcastle,	C. L. Nichols,	0	7	1859.
North Bridgeton,	M. Gould,	1	1	1860 and 1861.
Norway,	G. W. Verrill, Jr.,	1	1	1860 and 1861.
Oxford,	Howard D. Smith,	2	0	1868 and 1869.
Portland,	H. Willis & J. W. Adams,	6	0	1856 to 1861 inclusive.
Saccarappa,	....	0	1	September, 1861.
Saco,	J. M. Batchelder,	3	0	1844, 1845 and 1846.
Standish,.	John P. Moulton,	4	3	1865 to 1869 inclusive.
Topsham,	Warren Johnson,	1	11	1859, 1860 and 1861.
Webster,	A. Robinson,	1	4	1865, 1866 and 1867.
Windham,	Samuel A. Eveleth,	1	11	1854, 1855 and 1856.
Winthrop,	"The Maine Farmer,"	0	2	1840.

(Nos. 304 to 308.) **Southwestern Maine.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
304. Saco.	The year	739	199	69	196	693	299	327	529	...	N. 69° 50′ W.	.20	....	...	1096
305. Brunswick.	January	253	1071	91	161	42	912	254	1717	...	N. 39 W.	.40½			
	February	214	817	92	178	63	930	247	1646	...	N. 49 W.	.40			
	March	194	646	153	372	109	1188	221	1768	...	N. 64 W.	.34½			
	April	183	645	171	447	160	1312	185	1409	...	N. 79 W.	.26			
	May	149	565	268	620	206	1619	116	1064	...	S. 62 W.	.22			
	June	141	395	149	533	194	1797	163	1118	...	S. 66 W.	.34½			
	July	136	297	111	378	236	2154	251	1127	...	S. 66 W.	.46			
	August	136	352	110	437	166	2049	246	1139	...	S. 68 W.	.42½			
	September	136	448	116	297	138	1645	193	1260	...	S. 84 W.	.38			
	October	177	575	106	337	147	1351	275	1484	...	N. 79 W.	.35			
	November	229	813	113	249	67	931	297	1821	...	N. 49 W.	.40½			
	December	250	1107	83	136	39	921	301	1782	...	N. 40 W.	.42			
	The year	2198	7731	1563	4145	1567	16809	2749	17335	...	N. 78 W.	.32			
	Spring	526	1856	592	1439	475	4119	522	4241	...	N. 83 W.	.26			
	Summer	413	1044	370	1348	596	6000	660	3384	...	S. 67 W.	.41			
	Autumn	542	1836	335	883	352	3927	765	4565	...	N. 74 W.	.35½			
	Winter	717	2995	266	475	144	2763	802	5145	...	N. 44 W.	.41			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 W.	.32			
306. Fort Preble.	January	351	88	21	32	57	167	199	271						
	February	250	79	24	40	83	199	219	205						
	March	180	138	113	80	112	188	215	405						
	April	151	116	79	114	134	182	176	208						
	May	139	99	72	169	186	211	186	123						
	June	86	61	72	173	210	242	271	146						
	July	113	59	46	106	249	312	239	205						
	August	138	73	64	105	270	280	219	150						
	September	122	64	57	73	214	229	198	186						
	October	159	89	42	81	158	215	175	156						
	November	195	94	23	62	61	169	242	168						
	December	253	93	15	35	54	117	219	171						
	Spring	470	353	264	363	432	581	577	736	...	N. 79 13 W.	.20			
	Summer	337	193	182	384	729	834	729	501	...	S. 54 46 W.	.34½			
	Autumn	476	247	122	216	433	613	615	510	...	S. 89 32 W.	.30			
	Winter	854	260	60	107	194	483	637	647	...	N. 51 40 W.	.43½			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 83 41 W.	.28			
307. Bath.	The year	34	638	28	581	54	452	84	1264	249	S. 82 0 W.	.26	....	...	3653
308. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	194	449	145	248	205	419	268	578	...	N. 54 0 W.	.156	N. 77° E.	.08	
	Summer	152	209	154	379	271	486	292	479	...	S. 58 53 W.	.185	S. 14 E.	.17	
	Autumn	179	331	109	251	176	526	345	718	...	N. 74 30 W.	.263	S. 85 W.	.06	
	Winter	259	520	70	162	106	454	412	935	...	N. 48 27 W.	.361	N. 22½ W.	.18	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 69 16 W.	.216			
No. of miles.	Spring	1211	4543	807	2034	1117	2539	1413	5318	...	N. 21 31 W.	.205	N. 44 E.	.10	
	Summer	934	1498.5	770	3295	2027	3865	1179	3285	...	S. 36 49 W.	.196	S. 6 E.	.27	
	Autumn	1071	2832	582	2687	906	3690	1496	5553	...	N. 65 56 W.	.196	S. 40 W.	.05	
	Winter	1497	5042.5	442	1559	463	2423.5	1982.5	8571	...	N. 30 39 W.	.389	N. 13 W.	.23	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 50 16 W.	.185			
M'n vel. in miles p. h'r.	Spring	6.24	10.12	5.57	8.20	5.45	6.06	5.27	9.20						
	Summer	6.14	7.17	5.00	8.69	7.48	7.95	4.04	6.86						
	Autumn	5.98	8.56	5.34	10.71	5.15	7.02	4.34	7.73						
	Winter	5.78	9.70	6.31	9.62	4.37	5.34	4.81	9.17						

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.57	6.95	7.14	7.53	7.30
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.18	1.29	1.88	2.72	1.58
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.55	1.36	1.40	2.93	1.35
Excess of the latter over the former	+.37	+.07	—.48	+.21	—.23

[2] Computed from the resultants for the seasons.

(No. 309.) **Southwestern Maine.**—*Continued.*

Kind of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
309. Aggregate number of observations at all stations.	Surface winds.	Spring	3459	3400	1679	2891	4024	3407	3154	6232	1012	N. 65° 0′ W.	.14½		
		Summer	2504	2042	1377	2962	5694	5005	3823	4558	935	S. 53 45 W.	.24		
		Autumn	3305	2960	1115	2113	3592	4023	3535	6080	1183	N. 73 32 W.	.22		
		Winter	4041	2703	874	1190	2241	3524	4594	6292	1028	N. 58 36 W.	.35		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 79 5 W.	.21½		
	Motion of clouds.	Spring	496	393	200	211	601	676	1063	1461	...	N. 73 27 W.	.40	N. 40° E.	.07
		Summer	401	352	170	228	931	1122	1603	1276	...	S. 83 1 W.	.45	S. 8 W.	.12
		Autumn	524	396	141	253	747	1007	1169	1336	...	N. 87 9 W.	.40	S. 37 E.	.06
		Winter	525	303	100	96	392	687	1223	1356	...	N. 71 47 W.	.51½	N. 31 W.	.12
		The year[1]	...	...	...	...	...	...	...	...	...	N. 82 4 W.	.43		
	2 preceding combined.	Spring	3955	3793	1879	3102	4625	4083	4217	7693	1012	N. 67 44 W.	.18	N. 73 E.	.08
		Summer	2905	2394	1547	3190	6625	6127	5426	5834	935	S. 61 50 W.	.27	S. 2½ E.	.15
		Autumn	3829	3356	1256	2366	4339	5030	4704	7416	1183	N. 77 7 W.	.25	S. 11½ W.	.15½
		Winter	4566	3006	974	1286	2633	4211	5817	7648	1028	N. 61 18 W.	.37	N. 31 W.	.01½
		The year	15255	12549	5656	9944	18222	19451	20164	28591	4158	N. 80 40 W.	.24½		

[1] Computed from the resultants for the seasons.

(Nos. 310 to 313.) **Southern Maine.**

Observed as follows :—

Place of observation.	By whom observed	Aggregate length of time. yrs	mos.	Date.
Bangor,	Mr. Young and S. Gilman,	0	7	1844, 1845 and 1860.
Belfast,	G. E. Brackett,	3	10	1859 to 1863 inclusive.
Brewer,	Mr. Blake,	0	3	1843.
Bucksport,	Rufus Buck,	1	0	1850.
Carmel,	J. J. Bell,	3	0	1854 to 1857 inclusive.
Dexter,	B. F. Wilbur,	5	2	1858 to 1863 inclusive.
Exeter,	J. B. Wilson,	1	0	1858, 1860 and 1861.
Freedom,	E. A. Buller,	0	2	1859.
Hampden,	J. Herrick,	3	9	August, 1843, to April, 1847, inclusive.
Hartland,	E. A. Brown and others,[1]	0	5	1859.
Manhegin Island,	....	0	3	1843.
New Sharon,	J. F. Pratt, M.D.,	1	6	1860, 1861 and 1862.
North Belgrade,	A. H. Wyman,	0	10	1860.
North Prospect,	Virgil G. Eaton,	0	2	1867.
Oldtown,	Rev. S. H. Merrill,	2	0	1854, 1855 and 1864.
Owl's Head,	....	0	6	1843.
Rumford Point,	Waldo Pettingill,	1	2	1866 to 1869 inclusive.
South Thomaston,	Joshua Bartlett,	1	2	1843, 1844, 1845, 1854, 1855 and 1860.
Southwest Harbor,	Mr. Howes,	0	1	1843.
Vassalboro,	James Van Blarcom,	3	9	1859 to 1863 inclusive.
Vinal Haven,	Mr. Calderwood,	0	2	1843.
Warren,	Calvin Bickford,	0	9	1859 and 1860.
West Waterville,	B. F. Wilbur,	6	6	1863 to 1869 inclusive.

[1] S. W. Hall, L. S. Strickland and others.

(Nos. 310 to 311½.) **Southern Maine.**—*Continued.*

Place and kind of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
310. Hampden.	January	132	78	15	45	207	219	111	453	...	N. 72° 3′ W.	.42	N. 18° W.	.22	124
	February	135	48	12	57	174	180	231	456	...	N. 75 52 W.	.47	N. 34 W.	.22	113
	March	102	63	18	87	306	147	240	369	...	S. 82 24 W.	.36	N. 60 W.	.06	124
	April	120	32	16	108	288	104	284	364	...	S. 85 41 W.	.38	N. 59 W.	.08	90
	May	56	88	8	204	408	124	188	268	...	S. 37 3 W.	.31	S. 40 E.	.22	93
	June	128	76	8	100	404	184	264	192	...	S. 54 9 W.	.36	S. 6 E.	.15	90
	July	44	60	16	136	536	152	204	240	...	S. 34 3 W.	.42	S. 15 E.	.30	93
	August	90	84	18	111	453	69	186	195	...	S. 36 30 W.	.30	S. 35 E.	.22	124
	September	111	33	3	69	414	102	171	369	...	S. 71 58 W.	.35	S. 19 W.	.05	120
	October	132	63	24	177	276	189	147	342	...	S. 70 41 W.	.26	N. 75 W.	.07	124
	November	123	102	21	114	174	165	255	399	...	N. 77 37 W.	.37	N. 10½ W.	.16	120
	December	183	48	3	51	249	162	231	474	...	N. 75 46 W.	.45	N. 29½ W.	.22	124
	The year	1356	775	162	1259	3889	1797	2512	4211	...	S. 77 15 W.	.33	....	...	1339
311. Aggregate number of observations at all stations. Surface winds.	Spring	1044	1235	475	818	1358	1398	1684	2788	547	N. 70 28 W.	.25			
	Summer	526	646	302	719	1653	1880	1504	1708	410	S. 64 54 W.	.29½			
	Autumn	928	953	360	743	1111	1333	1544	2614	405	N. 72 30 W.	.29			
	Winter	1357	1175	325	455	826	1140	1519	2997	680	N. 51 43 W.	.36			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 75 46 W.	.27½			
Motion of clouds.	Spring	205	152	50	140	153	350	334	649	...	N. 70 52 W.	.41	N. 17 E.	.06	
	Summer	99	94	36	121	109	353	310	358	...	S. 87 39 W.	.42	S. 12 W.	.10	
	Autumn	144	75	27	127	125	249	276	363	...	N. 83 21 W.	.39	S. 24 E.	.04	
	Winter	128	111	37	96	81	218	318	459	...	N. 69 36 W.	.45	N. 14 W.	.08	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 50 W.	.41			
2 preceding combined.	Spring	1249	1387	525	958	1511	1748	2018	3437	547	N. 70 34 W.	.28	N. 42½ E.	.03	
	Summer	625	740	338	840	1762	2233	1814	2066	410	S. 68 41 W.	.31	S. 00½ W.	.18	
	Autumn	1072	1028	387	870	1236	1582	1820	2977	405	N. 74 15 W	.30	N. 19 W.	.01	
	Winter	1485	1286	362	551	907	1358	1837	3456	680	N. 54 6 W.	.37	N. 5½ W.	.15	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 76 13 W.	.29½			
311½. Surface winds at Carmel in the years 1854, '55, '56 & '57.[1] No. of observat'ns.	Spring	4	59	4	81	12	70	60	259	...	N. 59 52 W.	.34			
	Summer	0	12	8	69	14	115	60	100	...	S. 66 8 W.	.34			
	Autumn	2	40	9	85	19	106	44	193	...	N. 85 24 W.	.25			
	Winter	14	84	13	53	11	60	86	332	...	N. 49 23 W.	.43			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 74 9 W.	.31			
No. of miles.	Spring	61	633	22	548	48	639	500	3569	...	N. 50 41 W.	.48			
	Summer	0	94	48	404	56	903	517	1009	...	S. 82 14 W.	.39			
	Autumn	8	333	75	535	130	718	364	2329	...	N. 64 28 W.	.36			
	Winter	202	1122	86	388	49	421	662	4456	...	N. 39 59 W.	.53			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 57 28 W.	.42			
M'n vel. in miles p.h'r.	Spring	15.25	10.73	5.50	6.76	4.00	9.13	8.33	13.78						
	Summer	0.00	7.83	6.00	5.86	4.00	7.85	8.62	10.09						
	Autumn	4.00	8.32	8.33	6.29	6.84	6.77	8.27	12.07						
	Winter	14.43	13.36	6.62	7.23	4.45	7.01	7.70	13.42						

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.96	8.02	9.02	11.31	9.83
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	3.75	2.71	2.29	4.90	3.03
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	5.27	3.13	3.25	5.97	4.13
Excess of the latter over the former	+1.52	+.42	+.96	+1.07	+1.10

[2] Computed from the resultants for the seasons.

(Nos. 312 to 314.) **Southeastern Maine.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Addison,	Mr. Wafs,	0	5	1843 and 1845.
Eastport,	Post Surgeon at Fort Sullivan,	18	10	1822 to 1826, 1831 to 1835, 1841 to 1845 and 1849 to 1853, all inclusive.
Machias,	Mr. Stearns,	0	1	1844.
Pembroke,	Rev. E. Dewhurst,	0	9	1842.
Perry,	William D. Dana,	9	8	1854 to 1865 inclusive, except 1860.
Steuben,	J. D. Parker,	15	4	1843 and 1854 to 1869 inclusive.

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
312. Eastport.	January	156	118	32	86	87	160	230	366	...				
	February	106	72	52	67	121	193	227	285	...				
	March	98	132	74	118	132	171	230	285	...				
	April	97	127	97	95	162	210	169	237	...				
	May	42	120	80	120	244	297	127	212	...				
	June	53	74	83	112	256	246	149	193	...				
	July	66	64	47	96	421	292	158	157	...				
	August	81	79	99	102	350	234	163	168	...				
	September	80	75	53	113	208	185	175	173	...				
	October	68	69	49	99	192	227	189	203	...				
	November	114	64	59	73	62	171	234	294	...				
	December	113	86	55	64	55	166	247	325	...				
	Spring	237	379	251	333	538	678	526	734	...	S. 73° 27′ W.	.22		
	Summer	200	217	229	310	1027	772	470	518	...	S. 36 3 W.	.35½		
	Autumn	262	208	161	285	462	583	598	670	...	S. 78 49 W.	.31		
	Winter	375	276	139	217	263	519	704	976	...	N. 69 29 W.	.39		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 69 22 W.	.29		
313. Surface winds at Smithsonian Stations[1] in 1854, '55, '56 & '57.[2] No. of observations.	Spring	49	310	53	93	43	398	97	344	...	N. 66 52 W.	.213	N. 68° E.	.05
	Summer	25	140	15	84	26	506	96	165	...	S. 62 59 W.	.398	S. 24 W.	.27
	Autumn	33	202	10	62	5	329	47	210	...	N. 79 31 W.	.249	S. 15 W.	.02
	Winter	89	321	29	43	22	213	99	361	...	N. 30 41 W.	.351	N. 15 E.	.25
	The year[3]	...	...	...	...	...	...	...	...	...	N. 75 36 W.	.252		
No. of miles.	Spring	499	3119	443	697	371	2889	593	3692	...	N. 41 9 W.	.249	N. 45 E.	.07
	Summer	179	718	58	556	197	2693	579	1376	...	S. 71 31 W.	.391	S. 30 W.	.30
	Autumn	271	1533	138	743	10	2127	205	2086	...	N. 61 41 W.	.218	S. 40 E.	.04
	Winter	684	3192	185	603	196	1481	653	4022	...	N. 22 9 W.	.390	N. 17 E.	.23
	The year[3]	...	...	...	...	...	...	...	...	...	N. 52 3 W.	.260		
M'n vel. in miles p. h'r.	Spring	10.18	10.06	8.36	7.49	8.63	7.26	6.11	10.73					
	Summer	7.16	5.13	3.87	6.62	7.58	5.32	6.03	8.34					
	Autumn	8.21	7.59	13.80	11.98	2.00	6.47	4.36	9.93					
	Winter	7.69	9.94	6.38	14.02	8.91	6.95	6.60	11.14					

[1] Including also Oldtown in Southern Maine.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.87	6.01	7.92	9.36	8.04
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.89	2.39	1.97	3.29	2.16
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.21	2.35	1.73	3.65	2.09
Excess of the latter over the former	+.32	—.04	—.24	+.36	—.07

[3] Computed from the resultants for the seasons.

(No. 314.) **Southeastern Maine.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
314. Aggregate number of observations at all stations.	Surface winds.	Spring	508	2112	456	1156	843	2761	877	2557	209	N. 83° 58′ W.	.16½		
		Summer	397	1208	335	1054	1344	4085	827	1858	209	S. 52 4 W.	.35		
		Autumn	578	1609	267	722	635	2856	928	2443	255	N. 84 15 W.	.27		
		Winter	734	1903	222	547	351	1633	1122	3479	187	N. 46 26 W.	.38		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 84 38 W.	.24½		
	Motion of clouds.	Spring	212	505	51	129	124	815	483	685	...	N. 75 55 W.	.36	N. 50° E.	.11
		Summer	146	411	48	96	72	1338	666	627	...	S. 82 53 W.	.48½	S. 33 W.	.09
		Autumn	167	425	29	99	100	1242	495	607	...	S. 83 50 W.	.44½	S. 6 W.	.06
		Winter	203	319	30	53	51	764	564	563	...	N. 80 49 W.	.48	N. 31 W.	.07
		The year[1]	...	...	...	...	...	...	...	...	...	N. 84 12 W.	.44		
	2 preceding combined.	Spring	720	2617	507	1285	967	3576	1360	3242	209	N. 86 28 W.	.18	S. 87 E.	.10
		Summer	543	1619	383	1150	1416	5423	1493	2485	209	S. 61 11 W.	.37	S. 12½ W.	.20
		Autumn	745	2034	296	821	735	4098	1423	3050	255	N. 88 15 W.	.31	S. 75½ W.	.03
		Winter	937	2222	252	600	402	2397	1686	4042	187	N. 54 31 W.	.38½	N. 8 W.	.21
		The year[1]	...	...	...	...	...	...	...	...	...	N. 86 36 W.	.28		

[1] Computed from the resultants for the seasons.

Average duration of Winds in the several months, in the New England States, south of latitude 45°, deduced from observations made previous to the year 1848, at forty-nine different stations, for an aggregate period of nearly seventy-nine years.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N N. W.	Calm or variable.
315. New England, south of lat. 45°.	January	3.55	.10	2.77	.10	1.88	.08	1.95	.10	1.68	.16	4.61	.15	3.73	.30	9.95	.29	.30
	February	2.66	.19	2.50	.09	1.19	.13	1.81	.09	2.07	.12	4.27	.15	3.52	.16	8.71	.12	.46
	March	2.68	.09	3.13	.09	1.52	.05	2.67	.09	3.07	.08	4.76	.03	3.42	.08	8.72	.13	.39
	April	2.18	.20	3.77	.03	2.32	.02	3.00	.02	3.41	.14	5.58	.12	2.62	.08	6.35	.13	.03
	May	1.74	.15	3.15	.09	1.93	.16	3.46	.06	4.51	.32	6.75	.16	3.15	.16	4.94	.12	.15
	June	1.42	.11	2.09	.13	1.60	.08	2.90	.12	4.37	.19	8.04	.53	2.97	.13	5.07	.06	.19
	July	1.44	.08	1.79	.04	1.28	.03	2.70	.06	5.18	.18	10.07	.31	3.43	.06	4.16	.12	.07
	August	1.80	.14	3.04	.13	1.62	.08	3.30	.09	5.22	.19	7.77	.18	2.60	.05	4.46	.10	.23
	September	2.39	.19	3.44	.18	1.72	.08	2.71	.15	3.68	.27	6.05	.30	2.83	.19	5.39	.21	.22
	October	2.32	.05	2.92	.08	1.43	.02	2.48	.07	3.77	.09	6.83	.08	3.39	.09	7.16	.20	.02
	November	2.91	.17	2.92	.09	1.28	.13	1.98	.04	1.79	.10	5.07	.17	3.44	.19	9.33	.23	.16
	December	3.22	.09	2.95	.08	1.25	.11	1.73	.06	1.83	.04	4.96	.05	4.04	.17	10.23	.17	.02
	Total	29.04	1.46	33.89	1.02	17.82	.99	29.65	.86	38.67	1.65	73.51	1.98	40.22	1.63	89.00	1.83	2.02

Place of observation.	Time of the year.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
315. New England, south of lat. 45°.	January	N. 56° 49′ W.	.38	N. 20° W.	.24	31.00
	February	N. 59 2 W.	.30	N. 2 E.	.15	28.24
	March	N. 64 31 W.	.26	N. 9 E.	.12	31.00
	April	N. 89 57 W.	.14	S. 84⅓ E.	.12	30.00
	May	S. 48 15 W.	.21	S. 34½ E.	.19	31.00
	June	S. 51 46 W.	.32	S. 1 W.	.23	30.00
	July	S. 47 8 W.	.41	S. 6½ W.	.29	31.00
	August	S. 40 51 W.	.25⅓	S. 34 E.	.24	31.00
	September	S. 76 15 W.	.17½	S. 62 E.	.12	30.00
	October	S. 84 16 W.	.26	S. 2 E.	.04	31.00
	November	N. 61 8 W.	.34	N. 13 W.	.18	30.00
	December	N. 59 3 W.	.39	N. 20 W.	.21	31.00
	Total	N. 87 37 W.	.26	....	...	365.24

(Nos. 316 to 319.) **Southern Nova Scotia.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time.		Date.
		yrs.	mos.	
Halifax,	Board of Trade,	2	0	1854 and 1855.
Windsor,	King's College,	4	5	1794 and 1857 to 1863 inclusive, except 1860.

Kind and place of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E or between N.& E.	East.	S. E. or between S. & E.	South.	S. W. or between S.& W.	West.	N. W. or between N.&W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
316. Surface winds at Windsor in the year 1857.[1]	No. of observations.	Spring	11	7	5	9	5	21	10	18	...	N. 84° 51′ W.	.294		
		Summer	12	6	0	6	11	11	8	16	...	N. 76 19 W.	.215		
		Autumn	27	21	8	7	16	68	37	48	...	N. 85 46 W.	.344		
		Winter	7	8	4	5	3	20	23	14	...	N. 86 50 W.	.368		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 84 12 W.	.305		
	No. of miles.	Spring	85	64	14	59	22	178	159	119	...	N. 84 43 W.	.355		
		Summer	90	20	0	38	173	166	72	205	...	S. 76 55 W.	.309		
		Autumn	106	74	58	40	179	513	250	273	...	S. 71 51 W.	.410		
		Winter	55	22	12	32	49	105	228	86	...	S. 87 21 W.	.485		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 83 1 W.	.374		
	M'n vel. in miles p.h'r.	Spring	7.73	9.14	2.80	6.56	4.40	8.48	15.90	6.61					
		Summer	7.50	3.33	0	6.33	15.73	15.09	9.00	12.81					
		Autumn	3.93	3.52	7.25	5.71	11.19	7.54	6.76	5.69					
		Winter	7.86	2.75	3.00	6.40	16.33	5.25	9.91	6.14					
317. Windsor.		Spring	192	92	29	65	75	197	111	181	178	N. 62 21 W.	.24		
		Summer	122	81	48	72	67	181	126	126	176	N. 83 9 W.	.19		
		Autumn	141	88	31	36	75	250	178	172	177	N. 82 25 W.	.31½		
		Winter	114	83	33	39	37	188	188	188	159	N. 72 6 W.	.34		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 74 57 W.	.27		
318. Halifax.		Spring	141	39	5	65	83	91	40	82	1	N. 68 21 W.	.16½		
		Summer	75	17	1	44	94	152	52	46	6	S. 53 21 W.	.38		
		Autumn	106	38	1	40	46	89	26	90	5	N. 58 25 W.	.25½		
		Winter	109	36	7	28	22	50	28	90	11	N. 31 43 W.	.37½		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 72 11 W.	.23		
319. Nos. 317 and 318 combined.		Spring	316	115	33	122	150	274	146	241	179	N. 66 1 W.	.21½	N. 62° E.	.06½
		Summer	174	88	44	105	154	320	172	158	182	S. 72 5 W.	.25	S. 5 E.	.14
		Autumn	227	118	32	71	114	325	185	245	182	N. 78 1 W.	.29	N. 88½ W.	.03
		Winter	212	107	39	58	55	218	201	262	170	N. 59 55 W.	.33½	N. 20 W.	.11½
		The year[2]	...	...	...	...	...	...	...	...	...	N. 76 35 W.	.26		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.14	10.91	6.44	7.01	8.12
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.39	2.35	2.22	2.58	2.48
True velocity in mean direction, giving to the winds from the several points of the compass, each their own proper average velocity, as shown in the table	2.89	3.38	2.64	3.40	3.04
Excess of the latter over the former	+.50	+1.03	+.42	+.82	+.56

[2] Computed from the resultants for the seasons.

(Nos. 320 to 332.) **Atlantic Ocean.**

Computed from observations for an aggregate period of nearly 15 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
320. Long. 70° to 75° W.	Spring	29	23	45	14	27	76	34	8	74	41	74	21	24	25	52	27	27	S. 50° 30′ W.	.17	S. 47½° E.	.11½	189
	Summer	40	11	32	25	45	13	41	42	73	64	133	58	63	29	37	16	30	S. 37 17 W.	.31	S. 7½ E.	.22	251
	Autumn	21	16	34	7	23	4	11	6	24	15	39	20	44	30	37	17	12	N. 71 23 W.	.24	N. 5 W.	.11	120
	Winter	24	13	11	5	15	3	11	6	20	11	22	17	29	35	50	18	9	N. 64 41 W.	.28	N. 13 W.	.15½	100
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 82 16 W.	.22	....	...	660
321. Long. 65° to 70° W.	Spring	46	22	34	12	51	13	26	34	50	32	47	47	76	29	46	42	26	S. 85 26 W.	.16	N. 35 E.	.04½	211
	Summer	47	15	40	16	66	30	55	57	95	86	110	88	98	42	49	30	61	S. 38 35 W.	.28	S. 3 E.	.17	328
	Autumn	26	15	25	21	24	6	23	24	52	23	42	36	55	35	35	39	20	S. 80 3 W.	.20	N. 43½ W.	.02	167
	Winter	15	15	17	7	13	18	15	14	19	15	17	19	24	36	45	17	14	N. 69 58 W.	.20	N. 2 W.	.11½	107
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	S. 75 14 W.	.19	....	...	813
322. Long. 60° to 65° W.	Spring	35	28	30	9	28	9	21	15	28	12	35	25	43	24	25	16	18	N. 63 59 W.	.12	N. 68 E.	.11	134
	Summer	35	11	21	27	32	8	35	48	60	58	101	78	79	37	35	25	46	S. 48 19 W.	.31	S. 6 W.	.22	245
	Autumn	30	12	25	16	19	6	15	11	26	25	48	32	43	31	28	28	19	N. 87 38 W.	.24	N. 88 W.	.03	138
	Winter	15	16	9	7	13	9	11	10	12	7	21	11	23	33	40	24	6	N. 56 41 W.	.30	N. 14½ W.	.16	89
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 23 W.	.21	....	...	606
323. Long. 55° to 60° W.	Spring	29	6	17	9	26	16	25	22	36	32	45	11	42	21	21	20	16	S. 57 21 W.	.18	S. 53½ E.	.12	138
	Summer	19	16	18	13	29	14	30	21	60	56	100	45	90	28	27	13	26	S. 48 24 W.	.40	S. 12 W.	.24	202
	Autumn	39	20	17	3	15	6	17	7	30	23	34	27	38	35	44	44	16	N. 67 21 W.	.31	N. 14½ W.	.15	138
	Winter	17	9	26	3	8	13	14	4	12	10	22	14	37	31	42	15	18	N. 62 55 W.	.30	N. 6 W.	.16	98
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 25 W.	.25	....	...	576
324. Long. 50° to 55° W.	Spring	24	20	14	7	12	17	21	21	37	13	35	31	28	25	35	29	19	S. 81 47 W.	.18	S. 39½ E.	.02	129
	Summer	30	13	33	8	35	21	38	26	62	37	73	39	96	37	37	16	31	S. 54 24 W.	.27	S. 11½ W.	.15	210
	Autumn	25	14	25	17	21	14	25	18	19	19	29	14	27	30	44	37	25	N. 52 7 W.	.13	N. 43¼ E.	.13½	134
	Winter	15	21	18	7	9	4	8	11	13	21	31	17	28	10	38	11	11	N. 78 59 W.	.24	N. 38 W.	.12½	91
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 55 W.	.19	....	...	564
325. Long. 45° to 50° W.	Spring	23	20	14	19	8	15	20	23	28	34	36	47	30	40	28	33	13	S. 78 59 W.	.24	N. 89½ W.	.10	144
	Summer	20	29	21	25	16	32	19	49	38	49	34	70	55	24	21	21	29	S. 41 45 W.	.22	S. 7 W.	.12	184
	Autumn	17	24	20	23	21	22	19	32	15	20	19	17	23	23	26	18	14	N. 78 6 E.	.02	N. 72 E.	.16	118
	Winter	21	15	5	19	6	19	12	22	15	21	9	26	18	36	19	16	3	N. 79 18 W.	.15	N. 10½ W.	.07½	94
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 70 50 W.	.14	....	...	540
326. Long. 45° to 75° W.	January	42	21	28	25	22	26	16	21	39	32	46	33	51	59	64	35	20	N. 73 28 W.	.22	N. 16 W.	.08	193
	February	29	37	33	14	22	20	13	15	17	22	38	30	46	60	89	39	18	N. 51 48 W.	.32	N. 16 W.	.22	181
	March	52	24	30	21	56	32	60	27	74	36	73	39	79	66	89	47	25	S. 82 8 W.	.16	N. 77 W.	.03	277
	April	73	30	36	18	37	16	39	30	60	50	73	57	56	49	63	57	39	N. 86 53 W.	.19	N. ½ W.	.02½	261
	May	61	65	88	31	59	38	58	66	119	78	126	86	113	49	75	63	55	S. 56 29 W.	.15	S. 43 E.	.09½	410
	June	70	27	35	34	77	25	53	53	110	112	195	137	158	71	54	36	40	S. 52 10 W.	.35	S. 24 W.	.22	429
	July	62	35	67	31	76	43	85	87	160	150	222	186	204	86	90	61	112	S. 50 32 W.	.34	S. 20 W.	.21½	589
	August	59	33	62	49	70	50	80	103	118	88	134	55	119	40	62	24	71	S. 18 52 W.	.22	S. 31½ E.	.22½	406
	September	54	59	67	36	52	24	39	44	74	72	90	48	86	49	55	47	46	N. 68 44 W.	.16	N. 27½ E.	.08½	314
	October	49	19	41	20	33	13	27	32	55	30	39	31	64	60	75	59	25	N. 67 33 W.	.23	N. 13 W.	.10½	224
	November	55	23	38	31	38	21	44	22	37	23	82	58	80	75	84	77	35	N. 68 51 W.	.26	N. 26 W.	.11	274
	December	36	31	25	9	20	20	42	31	35	31	38	41	62	62	81	27	23	N. 82 22 W.	.24	N. 46½ W.	.05	205
	The year	642	404	550	319	562	328	556	531	898	724	1156	801	1118	726	881	572	509	S. 85 8 W.	.19	....	...	3763
327. Long. 40° to 45° W.	Spring	14	13	6	10	5	9	16	29	22	42	50	62	51	72	33	43	18	S. 80 10 W.	.43	N. 83½ W.	.13½	165
	Summer	11	12	7	17	15	35	31	36	43	64	26	49	38	31	19	20	28	S. 27 22 W.	.20	S. 65½ E.	.21½	161
	Autumn	16	16	6	11	4	10	7	8	21	25	16	17	8	37	25	17	9	N. 81 54 W.	.24	N. 22 E.	.13	84
	Winter	7	9	0	7	8	6	2	11	11	30	16	16	24	25	17	21	9	N. 81 42 W.	.35	N. 23 W.	.15	73
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 39 W.	.30	....	...	483
328. Long. 35° to 40° W.	Spring	13	18	5	9	1	9	19	19	24	34	35	57	37	34	13	23	10	S. 66 15 W.	.39	S. 76 W.	.09	120
	Summer	6	7	7	20	21	14	21	55	28	50	42	59	36	28	13	15	19	S. 31 16 W.	.37	S. 22¾ E.	.19½	147
	Autumn	19	12	6	18	9	12	8	9	10	13	21	18	19	33	10	16	13	N. 73 15 W.	.19	N. 24½ E.	.19½	82
	Winter	5	5	1	2	3	3	6	13	4	10	10	24	29	17	15	2	1	S. 71 17 W.	.35	N. 59 W.	.05	50
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 30 W.	.30	....	...	399
329. Long. 30° to 35° W.	Spring	16	35	8	12	4	13	4	10	19	23	14	27	27	29	19	27	4	N. 65 56 W.	.26	N. 8 W.	.18	97
	Summer	5	3	2	23	10	19	22	31	22	23	29	34	22	22	14	19	15	S. 29 12 W.	.27	S. 25½ E.	.18½	105
	Autumn	9	9	13	17	12	9	3	14	13	13	7	10	14	10	13	5	13	S. 12 44 E.	.06	N. 2¾ E.	.22	61
	Winter	1	3	3	1	5	0	3	4	7	12	13	11	15	17	15	5	0	S. 80 18 W.	.48	S. 87 W.	.26	38
	The year[1]	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	S. 71 43 W.	.22	....	...	301
330. Long. 20° to 30° W.	Spring	16	31	12	16	10	8	14	13	20	21	23	26	8	19	17	23	8	N. 71 23 W.	.10	N. 46½ E.	.13	95
	Summer	15	11	5	8	16	5	18	21	24	28	19	30	35	29	30	36	18	S. 82 53 W.	.27	N. 73½ W.	.08	116
	Autumn	13	9	6	11	4	5	3	17	15	19	5	15	24	22	19	14	13	N. 86 44 W.	.24	N. 33½ W.	.08½	71
	Winter	5	3	6	5	11	5	8	13	12	19	19	23	13	5	4	11	2	S. 35 30 W.	.32	S. 1¾ E.	.20	55
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 19 W.	.22	....	...	337

[1] Computed from the resultants for the seasons.

(Nos. 331 and 332.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
331. Long. 0° to 20° W.	Spring	5	17	12	8	3	0	3	3	9	3	8	11	9	9	4	8	4	N. 30° 42′ W.	.19	N. 73° E.	.12	39
	Summer	10	13	4	8	2	2	8	6	4	1	4	11	9	23	16	16	4	N. 41 14 W.	.36	N. 9½ W.	.14½	47
	Autumn	6	3	12	7	4	7	7	6	6	13	11	13	23	8	15	15	2	N. 84 35 W.	.24	S. 13¼ W.	.11	53
	Winter	4	9	11	7	4	3	3	7	6	7	13	21	7	21	15	7	3	N. 78 32 W.	.29	S. 45 W.	.10	49
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 58 48 W.	.25	....	...	188
332. Long. 0° to 45° W.	January	5	6	1	7	7	3	1	18	6	25	23	27	17	19	10	4	5	S. 57 49 W.	.43	S. 35 W.	.18½	61
	February	1	8	14	3	6	6	13	19	22	17	29	26	42	30	28	13	5	S. 72 6 W.	.38	S. 69 W.	.11	94
	March	19	43	24	13	9	9	14	22	20	35	26	62	55	62	30	34	20	N. 79 24 W.	.32	N. 72¼ W.	.06	166
	April	16	33	4	18	9	20	25	32	34	35	39	58	36	47	19	43	14	S. 70 0 W.	.25	S. 70 E.	.02½	161
	May	29	38	15	24	5	10	17	20	40	53	65	63	42	54	37	47	10	S. 83 53 W.	.31	N. 49 W.	.06½	190
	June	19	18	6	23	17	14	40	37	42	47	62	71	64	65	45	44	27	S. 68 4 W.	.33	S. 46¾ W.	.06½	213
	July	8	11	9	20	19	45	49	60	47	60	20	65	38	35	17	28	40	S. 14 34 W.	.30	S. 41 E.	.28	190
	August	20	17	10	33	28	16	11	52	32	59	38	47	38	33	30	34	17	S. 48 8 W.	.21	S. 59 E.	.12	172
	September	32	19	23	53	26	24	14	26	19	37	24	31	18	38	36	26	19	N. 17 15 W.	.06	N. 60 E.	.28	155
	October	23	25	14	7	4	14	3	16	30	28	24	31	31	50	38	28	27	N. 78 53 W.	.31	N. 18½ W.	.14½	131
	November	8	5	6	4	3	5	11	12	15	18	12	11	39	22	8	13	4	S. 71 46 W.	.35	S. 67 W.	.08	65
	December	16	15	6	12	18	8	8	11	12	36	19	42	29	36	28	29	5	N. 86 59 W.	.31	N. 28 W.	.11	110
	The year	196	238	132	217	151	174	206	325	319	450	381	534	448	491	326	343	193	S. 73 8 W.	.27	....	...	1708

[1] Computed from the resultants for the seasons.

(Nos. 333 to 354.) **Portugal and Spain,** north of latitude 40°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Balaguer, Spain,	PP. Jesuitas,	3	0	1866, 1867 and 1868.
Barcelona, Spain,	D. Antonio Rave,	3	0	1866, 1867 and 1868.
Bilbao, Spain,	D. Manuel Naveran,	3	0	1866, 1867 and 1868.
Burgos, Spain,	D. José Otano,	2	0	1867 and 1868.
Cantabria, Spain,	....	1	0	1785.
Corunna, Spain,	D. Benito Angel Sotelo,	3	0	1866, 1867 and 1868.
Huesca, Spain,	D. Serafin Casas,	2	10	1866, 1867 and 1868.
Leon, Spain,	PP. Jesuitas,	3	0	1866, 1867 and 1868.
Madrid, Spain,	Observatory,	12	0	1853 to 1862, and December, 1866, to November, [1868, both inclusive.
Oporto, Portugal,	D. Joaquin Gomez Coelho,	3	0	1866, 1867 and 1868.
Oviedo, Spain,	D. José Ceruelo,	14	0	1852 to 1862, and 1866 to 1868, both inclusive.
Salamanca, Spain,	D. Gabriel Aparicio,	3	0	1866, 1867 and 1868.
Santiago, Spain,	D. Antonio Casares,	3	0	1866, 1867 and 1868.
Saragossa, Spain,	D. Marcelo Guallart,	3	0	1866, 1867 and 1868.
Soria, Spain,	D. Benito Caiahorra,	3	0	1866, 1867 and 1868.
Valladolid, Spain,	D. Dionisio Barreda,	3	0	1866, 1867 and 1868.
Vergara, Spain,	D. Paulino Caballero,	1	11	1867 and 1868.
Villaviciosa, Spain,	D. Eduardo Conde,	3	0	1866, 1867 and 1868.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.													
333. Santiago.	Spring	41	67	1	11	33	79	28	16	...	N. 85° 32′ W.	.14			
	Summer	53	97	0	3	5	78	28	12	...	N. 17 9 W.	.26			
	Autumn	52	85	2	12	30	59	14	19	...	N. 1 48 E.	.16½			
	Winter	48	63	2	16	46	61	21	14	...	N. 3 25 W.	.06			
	The year	194	312	5	42	114	277	91	61	...	N. 32 58 W.	.12½			

(Nos. 334 to 346.) **Portugal and Spain.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
334. Corunna.	Spring	4	99	1	3	0	101	6	62	...	N. 47° 22′ W.	.24			
	Summer	3	132	0	0	9	51	1	80	...	N. 0 9 W.	.39			
	Autumn	5	79	0	3	0	75	4	107	...	N. 42 35 W.	.40½			
	Winter	1	82	0	7	3	101	5	41	...	N. 78 33 W.	.18			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 35 15 W.	.27			
335. North-western Spain.[1]	Spring	45	166	2	14	33	180	34	78	...	N. 61 29 W.	.18	S. 29° W.	.09	
	Summer	56	229	0	3	14	129	29	92	...	N. 6 53 W.	.32	N. 25 E.	.17	
	Autumn	57	164	2	15	30	134	18	126	...	N. 30 3 W.	.27	N. 18 W.	.07	
	Winter	49	145	2	23	49	162	26	55	...	N. 79 45 W.	.12	S. 2 W.	.14½	
	The year	207	704	6	55	126	605	107	351	...	N. 33 42 W.	.20			
336. Oporto.	Spring	54	13	12	23	11	69	49	45	...	N. 78 23 W.	.34	N. 80 W.	.14	
	Summer	67	19	3	7	0	37	82	61	...	N. 54 34 W.	.58	N. 45 W.	.41	
	Autumn	34	20	16	57	13	52	30	51	...	S. 79 43 W.	.12	S. 48 E.	.09	
	Winter	17	27	31	91	20	43	18	24	...	S. 38 30 E.	.29	S. 54 E.	.46	
	The year	172	79	62	178	44	201	179	181	...	N. 77 57 W.	.19			
337. Oviedo.	Spring	18	113	14	10	21	66	72	54	...	N. 42 20 W.	.22½	S. 46 E.	.05	1288
	Summer	21	158	18	3	5	38	79	29	...	N. 2 38 E.	.34	N. 56 W.	.25	1288
	Autumn	15	92	14	20	11	71	74	61	...	N. 57 9 W.	.25	S. 20 W.	.07	1274
	Winter	27	70	8	3	13	50	135	49	...	N. 67 21 W.	.44	S. 81 W.	.20½	1264
	The year	81	433	54	36	50	225	360	193	...	N. 43 2 W.	.27	....	...	5114
338. Leon.	Spring	30	5	7	73	62	28	34	37	...	S. 13 35 W.	.27½			
	Summer	50	10	19	55	53	17	61	11	...	S. 22 4 W.	.15			
	Autumn	39	2	14	26	41	6	33	21	...	S. 65 27 W.	.11			
	Winter	43	18	34	63	33	14	34	32	...	S. 69 50 E.	.10			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 15 6 W.	.12½			
339. Burgos.	Spring	23	65	6	11	33	23	18	5	...	N. 54 50 E.	.14½			
	Summer	8	123	6	3	10	11	21	2	...	N. 40 19 E.	.54½			
	Autumn	19	76	3	5	31	20	25	3	...	N. 35 59 E.	.18			
	Winter	23	55	5	4	41	19	30	4	...	N. 3 32 E.	.04			
	The year	73	319	20	23	115	73	94	14	...	N. 33 50 E.	.26			
340. Bilbao.	Spring	6	12	2	73	0	11	5	167	...	N. 43 13 W.	.36½	....	...	276
	Summer	7	19	9	6	0	1	4	230	...	N. 38 18 W.	.82	....	...	276
	Autumn	5	8	7	99	10	14	2	128	...	N. 60 19 W.	.08	....	...	273
	Winter	16	25	17	104	2	13	3	91	...	N. 67 15 E.	.13	....	...	271
	The year	34	64	35	282	12	39	14	616	...	N. 35 36 W.	.31	....	...	1096
341. Cantabria.	The year	61	111	93	32	95	269	184	222	39	S. 87 52 W.	.31	....	...	365
342. Vergara.	Spring	9	4	4	46	7	11	25	78	...	N. 67 6 W.	.27½			
	Summer	20	0	3	16	5	2	53	82	...	N. 58 26 W.	.63½			
	Autumn	12	3	15	38	6	9	24	75	...	N. 54 42 W.	.26½			
	Winter	5	7	4	29	9	14	17	65	...	N. 69 11 W.	.31			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 61 36 W.	.37			
343. Northern Spain.[2]	Spring	68	86	19	203	102	73	82	287	...	N. 73 1 W.	.13	S. 23 W.	.07	
	Summer	85	152	37	80	68	31	139	325	...	N. 34 31 W.	.36½	S. 29½ W.	.22½	
	Autumn	75	89	39	168	88	49	84	227	...	N. 45 11 W.	.10	S. 35 E.	.14	
	Winter	87	105	60	200	85	60	84	192	...	N. 56 43 E.	.02	N. 50 E.	.14½	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 43 12 W.	.14			
344. Salamanca.	Spring	16	25	35	28	4	69	36	63	...	N. 84 20 W.	.21			
	Summer	13	33	45	11	3	35	36	100	...	N. 37 44 W.	.33			
	Autumn	4	30	63	33	4	42	35	62	...	N. 4 42 W.	.04½			
	Winter	10	20	63	47	6	36	35	54	...	S. 78 38 E.	.04½			
	The year	43	108	206	119	17	182	142	279	...	N. 49 27 W.	.12			
345. Valladolid.	Spring	2	84	10	3	43	99	23	12	...	S. 33 31 W.	.20			
	Summer	5	116	9	3	41	73	26	3	...	S. 11 25 E.	.24½			
	Autumn	6	111	5	10	58	55	16	12	...	S. 67 59 E.	.11			
	Winter	1	123	3	6	45	80	6	7	...	S. 64 14 E.	.11			
	The year	14	434	27	22	187	307	71	34	...	S. 26 33 E.	.08			
346. Villaviciosa.	Spring	17	60	27	16	13	103	20	20	...	S. 48 2 W.	.13			
	Summer	13	66	45	10	9	91	22	20	...	S. 14 50 W.	.02½			
	Autumn	13	86	29	25	12	69	16	23	...	N. 66 17 E.	.10½			
	Winter	17	96	33	12	14	73	8	18	...	N. 57 35 E.	.16			
	The year	60	308	134	63	48	336	66	81	...	N. 82 5 E.	.03½			

[1] Observed at Santiago and Corunna.
[2] Observed at Leon, Burgos, Bilbao, Vergara and Oviedo.
[3] Computed from the resultants for the seasons.

(Nos. 347 to 354.) **Portugal and Spain.**—*Continued.*

Place of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
347. Madrid.	1853–1862.	Spring	11	16	8	7	12	19	10	9	S. 72° 52′ W.	.06½	S. 37½° W.	.06
		Summer	9	18	7	6	7	24	11	10	N. 86 58 W.	.12	S. 75½ W.	.09½
		Autumn	10	16	9	7	12	19	8	10	S. 58 20 W.	.04	S. 8½ W.	.05
		Winter	12	28	9	5	8	15	7	6	N. 37 2 E.	.19	N. 48½ E.	.18½
		The year	42	78	33	25	39	77	36	35	N. 40 59 W.	.04		
	Dec. 1866–Nov. 1868. No. of h'rs.	Spring	330	1086	255	394	329	1064	409	483	N. 68 23 W.	.05	S. 74½ W.	.11½
		Summer	240	1091	409	513	297	869	456	503	N. 51 33 E.	.03	S. 53 W.	.05
		Autumn	190	1391	422	429	439	846	315	328	N. 83 26 E.	.13	S. 57½ E.	.07½
		Winter	454	1368	389	438	297	720	271	394	N. 46 6 E.	.20½	S. 42 W.	.12½
		The year	1214	4936	1475	1774	1362	3499	1451	1708	N. 54 54 E.	.07½		
	Aggregate No. of hours.	Spring	2970	4926	2175	2074	3209	5624	2809	2643	S. 75 10 W.	.05	S. 43½ W.	.06
		Summer	2400	5411	2089	1953	1977	6629	3096	2903	N. 84 45 W.	.10	S. 77 W.	.09
		Autumn	2590	5231	2582	2109	3119	5406	2235	2728	S. 19 54 W.	.02	S. 1½ E.	.05
		Winter	3134	8088	2549	1638	2217	4320	1951	1834	N. 40 1 E.	.19	N. 48½ E.	.17
		The year	11094	23656	9395	7774	10522	21979	10091	10109	N. 18 49 W.	.04		
	No. of kilometres, Dec. 1866, to Nov. 1868.	Spring	6926	24857	3517	8201	5120	22536	8736	10881	N. 45 41 W.	.08½	S. 68 W.	.12
		Summer	4724	22928	5722	5970	3787	16178	8170	7483	N. 10 29 E.	.09	S. 66 W.	.02
		Autumn	2765	22234	4345	6867	4991	13785	4019	6605	N. 61 3 E.	.11	S. 59 E.	.10
		Winter	6521	22640	4368	3891	3455	12956	5030	6318	N. 21 1 E.	.19	N. 25 E.	.09
		The year	20936	92659	17952	24929	17356	65475	25955	31287	N. 13 50 E.	.09½		
348. Soria.		Spring	4	99	7	26	1	62	26	51	N. 12 39 W.	.17½		
		Summer	3	133	14	27	7	40	18	34	N. 40 25 E.	.32		
		Autumn	4	98	2	31	3	53	24	58	N. 10 8 W.	.19½		
		Winter	5	74	0	18	3	52	33	86	N. 44 57 W.	.34		
		The year	16	404	23	102	14	207	101	229	N. 10 27 W.	.21½		
349. Northern Central Spain.[1]		Spring	163	473	170	159	195	567	222	256	S. 80 55 W.	.08½	S. 51 W.	.09½
		Summe	134	574	200	132	142	515	231	278	N. 34 2 W.	.07½	N. 61 W.	.03½
		Autumn	135	543	207	187	206	444	184	269	N. 31 34 E.	.03	S. 53½ E.	.03½
		Winter	164	650	205	151	160	421	163	241	N. 31 26 E.	.12½	N. 51½ E.	.10
		The year	596	2240	782	629	703	1947	800	1044	N. 14 50 W.	.04½		
350. Saragossa.		Spring	0	0	0	94	0	6	2	174	N. 50 12 W.	.30		
		Summer	0	0	2	69	0	7	15	183	N. 52 30 W.	.45		
		Autumn	0	0	0	73	1	4	18	177	N. 53 49 W.	.43		
		Winter	0	0	0	57	0	5	2	207	N. 47 26 W.	.56		
		The year	0	0	2	293	1	22	37	741	N. 50 44 W.	.43		
351. Huesca.		Spring	19	14	11	68	10	15	17	122	N. 44 0 W.	.23		
		Summer	14	4	2	92	5	14	28	117	N. 68 52 W.	.20		
		Autumn	13	3	10	55	0	5	5	121	N. 36 29 W.	.34		
		Winter	21	26	3	43	0	10	10	158	N. 34 7 W.	.50½		
		The year[3]	...	...	...	...	...	...	...	...	N. 41 48 W.	.31		
352. Balaguer.		Spring	12	13	24	29	24	44	82	48	S. 77 37 W.	.35		
		Summer	12	16	28	45	25	63	48	39	S. 44 9 W.	.25½		
		Autumn	26	25	12	20	24	11	20	44	N. 27 34 W.	.18		
		Winter	38	32	24	40	23	27	28	59	N. 23 30 W.	.13		
		The year[3]	...	...	...	...	...	...	...	...	N. 88 19 W.	.16		
353. Barcelona.		Spring	2	9	61	40	60	69	31	4	S. 5 55 E.	.45½		
		Summer	0	4	63	58	98	46	7	0	S. 21 45 E.	.66		
		Autumn	6	20	56	31	47	53	58	3	S. 3 22 W.	.31		
		Winter	24	18	32	12	19	36	101	29	N. 87 23 W.	.34½		
		The year	32	51	212	141	224	204	197	36	S. 2 54 W.	.34		
354. Northeastern Spain.[2]		Spring	33	36	96	231	94	134	132	348	S. 75 48 W.	.17½	S. 8 E.	.08½
		Summer	26	24	95	264	128	130	98	339	S. 46 35 W.	.16	S. 24 E.	.16½
		Autumn	45	48	78	179	72	73	101	345	N. 65 18 W.	.18½	N. 19 E.	.04
		Winter	83	76	59	152	42	78	141	453	N. 49 35 W.	.36	N 25½ W.	.21½
		The year[3]	...	...	...	...	...	...	.	...	N. 78 1 W.	.18½		

[1] Observed at Salamanca, Valladolid, Villaviciosa, Madrid and Soria.
[2] Observed at Saragossa, Huesca, Balaguer and Barcelona.
[3] Computed from the resultants for the seasons.

(Nos. 355 to 368.) **Southern France.**

Observed at the following places, viz.:—

Bagneres de Bigorre, by F. W. Lyte, during the year 1864.

Bordeaux, 1837 to 1846, and by Abrai, during the years 1847 to 1851, and 1853 to 1856, all inclusive.

Eaux Bonnes, by Dr. B. Schnepp, from June to September inclusive, 1864.

Marseilles, during the years 1823 to 1840 inclusive, and by B. Valz, during 1847, 1848, and from 1850 to 1860 inclusive.

Montpelier, during a period of probably 37 years; date not preserved.

Orange, by Gasparin, during the years 1848, 1849 and fourteen earlier years whose date is not preserved.

Pau, by E. Oliphant, for an aggregate period of 12 months in the years 1866, 1867 and 1868.

Rodez, by Blondeau, from October, 1845, to September, 1847, and during the years 1848 to 1852, both inclusive.

St. Hyppolyte de Caton, by C. d'Hombres, during the years 1837 to 1853 inclusive.

Toulouse, by Marconelle, during the years 1747 to 1756 inclusive, and by Petit, during the years 1839 to 1847, 1849, 1850, 1851, 1853, 1855 to 1857, and 1859 to 1862, all inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
355. Bordeaux, 1837–1846.	The year	17	...	14	...	66	...	27	...	26	...	50	...	99	...	66	...	...	S. 85° 26′ W.	.23½	....	...	3652
356. Bordeaux, after 1846.	Spring	163	3	64	0	85	0	71	5	148	3	109	1	200	4	176	9	138	N. 74 46 W.	.20	N. 62° W.	.04	828
	Summer	166	1	45	0	58	5	69	2	71	1	90	2	254	7	214	7	222	N. 54 12 W.	.34	N. 52 W.	.19	828
	Autumn	158	1	50	5	89	6	98	4	82	2	78	1	124	4	114	10	227	N. 40 57. W.	.09	N. 73 E.	.10	819
	Winter	114	3	45	0	54	4	101	17	219	6	76	11	106	5	92	3	283	S. 25 58 W.	.15	S. 27½ E.	.19	812
	The year[2]	601	8	204	5	286	15	339	28	520	12	353	15	684	20	596	29	870	N. 77 35 W.	.15½	....	...	3287
357.	The year	618	8	218	5	352	15	366	28	546	12	403	15	783	20	662	29	870	N. 79 30 W.	.16	....	...	6939
358. Pau.	Spring	11	...	6	...	11	...	12	...	4	...	10	...	18	...	20	...	0	N. 57 37 W.	.20	....	...	92
	Autumn	11	...	6	...	14	...	13	...	17	...	2	...	5	...	4	...	5	S. 62 20 E.	.27	....	...	91
	Winter	14	...	6	...	18	...	36	...	34	..	15	...	21	...	34	...	0	S. 15 58 W.	.16	....	...	181
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	...	....	...	364
359. Eaux Bonnes.	Summer	94	20	9	15	10	13	27	28	11	4	8	5	2	8	17	27	...	N. 21 22 E.	.33	....	...	92
	September	17	3	1	2	2	2	8	13	4	1	2	1	0	2	1	5	...	N. 78 47 E.	.17½	....	...	30
360. Bagneres de Bigorre.	Spring	10	...	3	...	10	...	13	...	28	...	4	...	9	...	15	...	0	S. 3 43 W.	19	S. 86½ E.	.17	92
	Summer	13	...	2	...	4	...	2	...	15	...	7	...	29	...	20	...	0	N. 80 7 W.	.45½	N. 46 W.	.35	92
	Autumn	18	...	6	...	5	...	4	...	39	...	3	...	6	...	9	...	0	S. 8 56 W.	.17½	S. 89½ E.	.15	91
	Winter	6	...	0	...	2	...	9	...	37	...	11	...	16	...	10	...	0	S. 30 34 W.	.48½	S. 15 W.	.25	91
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 38 W.	.25½	....	...	366
361. Toulouse.	Spring	55	4	28	8	17	25	223	56	56	5	47	53	210	88	368	33	182	N. 79 42 W.	.28	....	...	1104
	Summer	93	12	40	8	20	9	172	48	63	8	62	32	163	96	412	46	239	N. 63 53 W.	.31½	....	...	1104
	Autumn	63	3	22	7	23	15	287	72	78	17	87	43	196	81	244	21	238	S. 62 29 W.	.20	....	...	1092
	Winter	31	6	29	9	25	5	228	87	113	24	97	40	207	75	231	24	255	S. 58 39 W.	.24	....	...	1082
	The year	242	25	119	32	85	54	910	263	310	54	293	168	776	340	1255	124	914	S. 88 10 W.	.23½	....	...	4382
362. South-western France.[1]	Spring	239	7	101	8	123	25	319	61	236	8	170	54	437	92	579	42	320	N. 78 48 W.	.23	N. 51 W.	.06	
	Summer	366	33	96	23	92	27	270	78	160	13	167	39	448	111	663	80	461	N. 58 3 W.	.29	N. 23 W.	.16	
	Autumn	267	7	85	14	133	23	410	89	220	20	172	45	331	87	372	36	470	S. 73 36 W.	.11½	S. 61½ E.	.08	
	Winter	165	9	80	9	99	9	374	104	403	30	199	51	350	80	367	27	538	S. 45 28 W.	.20	S. 16 E.	.15	
	The year	1054	56	376	54	513	84	1400	332	1045	71	758	189	1665	370	2047	185	1789	N. 87 18 W.	.18½			
363. Rodez	Spring	18	3	38	1	9	0	97	1	20	0	24	2	86	20	133	8	5	N. 64 59 W.	.28	....	...	460
	Summer	18	4	11	0	5	0	47	0	34	0	37	0	98	23	135	17	2	N. 74 20 W.	.48	S. 64 W.	.11½	460
	Autumn	26	0	32	0	3	0	42	2	14	2	15	0	67	2	143	10	4	N. 51 41 W.	.48	N. 5 W.	.12	455
	Winter	32	6	18	2	4	0	62	0	17	0	48	6	61	16	136	12	7	N. 65 42 W.	.39	....	...	452
	The year[2]	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	N. 64 46 W.	.39	....	...	1827
364. Montpelier.	The year	74	...	58	...	52	...	29	...	31	...	10	...	35	...	76	...	0	N. 9 8 E.	.30½	....	...	13514?
365. St. Hyppolite de Caton.	Spring	5815	...	3733	...	354	...	578	...	4287	...	359	...	222	...	1834	...	0	N. 18 45 E.	.29½	S. 10 E.	.12	1564
	Summer	6936	...	2625	...	204	...	486	...	4296	...	286	...	349	...	1923	...	0	N. 8 23 W.	.31	S. 53½ W.	.15	1564
	Autumn	5127	...	3399	...	303	...	716	...	4422	...	511	...	458	...	1966	...	...	N. 15 27 E.	.22	S. 5 W.	.18	1547
	Winter	6266	...	4002	...	115	...	261	...	3118	...	195	...	470	...	2320	...	...	N. 6 44 E.	.44	N. 27½ W.	.06	1534
	The year	24144	...	13759	...	976	...	2041	...	16123	...	1341	...	1499	...	8043	...	...	N. 10 48 E.	.40	....		6209

[1] Observed at Bordeaux, Pau, Eaux Bonnes, Bagnerres de Bigorre and Toulouse.
[2] Computed from the resultants for the seasons.

(Nos. 366 to 368.) **Southern France.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
366. Orange.	Spring	301	...	9	...	11	...	33	...	100	...	40	...	28	...	24	...	0	N. 10° 41′ W.	.32	....	...	184
	Summer	338	...	4	...	8	...	3	...	133	...	21	...	20	...	21	...	0	N. 10 8 W.	.38	....	...	184
	Autumn	170	...	28	...	8	...	64	...	48	...	69	...	9	...	124	...	0	N. 28 8 W.	.29½	....	...	182
	Winter	286	...	14	...	10	...	23	...	55	...	24	...	9	...	112	...	0	N. 13 32 W.	.55	....	...	181
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 14 51 W.	.39	....	...	730
367. Marseilles.	Spring	1	0	6	0	35	0	210	0	42	0	132	0	292	0	413	0	64	N. 88 26 W.	.41	S. 6° W.	.05½	1196
	Summer	0	0	0	0	5	0	138	0	41	0	203	0	424	0	346	0	49	S. 86 58 W.	.59	S. 63 W.	.21½	1196
	Autumn	2	0	5	0	65	0	214	0	37	0	90	0	231	0	445	0	78	N. 80 4 W.	.34	S. 81 E.	.06	1183
	Winter	2	0	8	0	63	0	101	0	13	0	29	0	71	0	351	0	53	N. 52 21 W.	.36	N. 36½ E.	.19	1143
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 80 34 W.	.40	....	...	4718
368. South-eastern France.[2]	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 41 W.	.24	S. 49 E.	.07	
	Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 56½ W.	.35	S. 70 W.	.10	
	Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 44 W.	.29	S. 18 E.	.02	
	Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 28 W.	.38	N. 19 E.	.11	
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 29 W.	.37½			

[1] Observed at Rodez, Montpelier, St. Hyppolite de Caton, Orange and Marseilles; resultants computed by plotting.
[2] Computed from the resultants for the seasons.

(Nos. 369 to 381.) **Italy, Dalmatia, Turkey and the Black Sea.**

Observed at the following places, viz.:—

Black Sea. Neither date nor length of time ascertained.

Bologna, Italy, during the years 1784 and 1814 to 1858 inclusive.

Constantinople, Turkey, by Rev. H. G. O. Dwight, for the author, from November 21st, 1839, to July 13th, 1841.

Genoa, Italy, during the month of March, 1843.

Mentone, Italy, by D. A. Freeman, for 15 months, in the years 1864, 1865 and 1866.

Naples, Italy, during the years 1833 to 1860 inclusive.

Nice, Italy, by M. Teysseire, during March and July to December inclusive, in the year 1864.

Parma, Italy, during 43 months in the years 1841, 1855, 1856 and 1857.

Ragusa, Dalmatia, during the year 1851.

Rome, Italy, during the years 1783 to 1785, and 1850 to 1860, both inclusive.

St. Zeno, Italy, during the year 1781.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	No. of days.
369. Nice.	Spring	3	1	12	7	3	4	0	0	1	S. 64° 30′ E.	.53	N. 52° E.	.20	31
	Summer	0	1	10	22	23	2	3	1	0	S. 28 44 E.	.71	S. 4½ E.	.27	62
	Autumn	5	2	28	14	17	19	2	1	3	S. 34 54 E.	.44½	S. 80 W.	.07	91
	Winter	10	4	27	8	14	17	2	1	7	S. 48 7 E.	.31	N. 32½ W.	.18	91
	The year[1]	...	...	...	...	...	...	...	...	...	S. 42 39 E.	.48	....	...	275
370. Mentone.	Spring	3	6	19	9	5	13	34	16	18	S. 85 25 W.	.20	....	...	122
	Autumn	10	3	12	9	3	33	33	7	12	S. 69 2 W.	.36	....	...	122
	Winter	3	10	26	17	3	12	52	26	49	N. 83 20 W.	.17	....	...	209
371. Genoa.	March	30	2	17	0	4	1	8	0	...	N. 19 59 E.	.46			
372. St. Zeno.	The year	9	7	53	14	16	7	13	10	...	S. 77 4 E.	.34	....	...	365
373. Parma.	Spring	86	86	106	40	12	49	51	84	2	N. 21 31 E.	.27	....	...	516
	Summer	64	79	82	27	14	91	63	86	0	N. 22 3 W.	.19	....	...	516
	Autumn	59	52	113	22	21	75	92	107	1	N. 34 34 W.	.18	....	...	542
	Winter	50	34	61	22	11	37	85	135	3	N. 42 13 W.	.36	....	...	438
	The year[1]	...	...	...	...	...	...	...	...	...	N. 20 28 W.	.22	....	...	2012

[1] Computed from the resultants for the seasons.

(Nos. 374 to 378.) **Italy, etc.—*Continued.***

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
374. Bologna, 1814–58.	January	1	...	1	...	1	...	0	...	1	...	2	...	19	...	6	...	...	....	...	....	...	1395
	February	1	...	1	...	2	...	1	...	1	...	2	...	14	...	6	...	...	....	...	....	...	1270
	March	2	...	2	...	4	...	2	...	1	...	3	...	11	...	6	...	...	....	...	....	...	1395
	April	2	...	2	...	7	...	2	...	2	...	3	...	7	...	5	...	...	....	...	....	...	1350
	May	3	...	3	...	6	...	2	...	3	...	3	...	7	...	4	...	...	....	...	....	...	1395
	June	2	...	3	...	6	...	2	...	2	...	4	...	7	...	4	...	...	....	...	....	...	1350
	July	3	...	2	...	7	...	3	...	1	...	2	...	8	...	5	...	...	....	...	....	...	1395
	August	2	...	2	...	7	...	3	...	2	...	2	...	8	...	5	...	...	....	...	....	...	1395
	September	2	...	2	...	6	...	2	...	2	...	3	...	9	...	4	...	...	....	...	....	...	1350
	October	2	...	1	...	4	...	2	...	2	...	3	...	12	...	5	...	...	....	...	....	...	1395
	November	2	...	1	...	2	...	1	...	1	...	2	...	16	...	5	...	..	....	...	....	...	1350
	December	1	...	1	...	2	...	1	...	1	...	0	...	20	...	5	...	...	....	...	....	...	1395
	Spring	7	...	7	...	17	...	6	...	6	...	9	...	25	...	15	...	...	N. 69° 20′ W.	.18½	S. 88° E.	.15	4140
	Summer	7	...	7	...	20	...	8	...	5	...	8	...	23	...	14	...	...	N. 55 8 W.	.10½	S. 87 E.	.24	4140
	Autumn	6	...	4	...	12	...	5	...	5	...	8	...	37	...	14	...	...	N. 82 26 W.	.38	S. 66 W.	.06	4095
	Winter	3	...	3	...	5	...	2	...	3	...	4	...	53	...	17	...	...	N. 80 31 W.	.67	N. 83½ W.	.35	4060
	The year	23	...	21	...	54	...	21	...	19	...	29	...	138	...	60	...	...	N. 77 32 W.	.33	....	...	16800
374(*a*). Bologna, 1784.	The year	25	...	127	...	180	...	14	...	19	...	156	...	470	...	55	...	...	N. 87 13 W.	.34	....	...	365
374(*b*). Nos. 369 to 374 combined.	Spring	129	...	102	...	171	...	62	...	30	...	76	...	118	...	115	...	21	N. 12 21 E.	.19	N. 58 E.	.14	
	Summer	71	...	87	...	112	...	57	...	42	...	101	...	89	...	101	...	0	N. 19 44 W.	.08	S. 56½ E.	.06½	
	Autumn	80	...	61	...	165	...	50	...	46	...	135	...	164	...	129	...	16	N. 69 43 W.	.13	S. 29½ W.	.08	
	Winter	66	...	51	...	119	...	49	...	32	...	70	...	192	...	179	...	59	N. 57 45 W.	.26	N. 78 W.	.14	
	The year	355	...	308	...	620	...	232	...	166	...	389	...	576	...	534	...	96	N. 33 18 W.	.12½			
375. Rome.[1]	January	149	17	90	2	55	0	15	9	46	4	15	3	22	2	4	4	...	....	...	....	...	372
	February	132	5	48	3	46	2	14	11	48	1	33	6	24	0	17	2	...	....	...	....	...	339
	March	113	11	34	1	45	0	13	8	69	6	63	8	46	3	11	0	...	....	...	....	...	372
	April	72	31	24	1	45	0	14	9	91	0	58	3	60	0	15	0	...	....	...	....	...	360
	May	65	5	23	1	34	0	15	10	109	2	74	8	69	0	16	3	...	....	...	....	...	372
	June	22	16	39	2	33	1	15	4	83	2	65	19	85	0	13	1	...	....	...	....	...	360
	July	58	12	37	1	23	0	15	5	83	1	94	16	76	0	13	0	...	....	...	....	...	372
	August	76	9	36	1	13	0	14	5	94	5	84	12	70	0	13	0	...	....	...	....	...	372
	September	104	7	33	1	33	1	17	3	94	4	57	9	44	0	14	4	...	....	...	....	...	360
	October	98	10	33	4	36	0	14	7	97	5	57	8	44	0	14	6	...	....	...	....	...	372
	November	118	13	74	5	45	3	20	8	57	1	31	2	26	0	13	3	...	....	...	....	...	360
	December	118	14	104	3	45	6	20	15	47	0	34	0	13	0	11	2	...	....	...	....	...	372
	Spring	250	47	81	3	124	0	42	27	269	8	195	19	175	3	42	3	...	S. 54 2 W.	.12	S. 34 W.	.12	1104
	Summer	156	37	112	4	69	1	44	14	260	8	243	47	231	0	39	1	...	S. 53 34 W.	.27	S. 44½ W.	.27	1104
	Autumn	320	30	140	10	114	4	51	18	248	10	145	19	114	0	41	13	...	N. 6 53 E.	.05½	N. 53 E.	.04½	1092
	Winter	399	36	242	8	146	8	49	35	141	5	82	9	59	2	32	8	...	N. 33 34 E.	.35	N. 40½ E.	.34	1083
	The year	1589	394	651	81	493	43	261	233	1069	107	978	338	638	27	227	142	...	N. 51 34 W.	.07½	....	...	5114
376. Naples.	January	7	0	8	0	1	0	2	0	4	0	5	0	1	0	3	0	...	....	...	....	...	868
	February	5	0	6	0	1	0	2	0	3	0	6	0	2	0	3	0	...	....	...	....	...	791
	March	5	0	6	0	1	0	2	0	4	0	8	0	2	0	3	0	...	....	...	....	...	868
	April	3	0	5	0	1	0	2	0	5	0	10	0	2	0	2	0	...	....	...	....	...	840
	May	3	0	4	0	1	0	2	0	6	0	11	0	2	0	2	0	...	....	...	....	...	868
	June	2	0	3	0	1	0	3	0	5	0	11	0	2	0	3	0	...	....	...	....	...	840
	July	1	0	3	0	1	0	3	0	6	0	11	0	3	0	3	0	...	....	...	....	...	868
	August	2	0	4	0	1	0	2	0	5	0	11	0	3	0	3	0	...	....	...	....	...	868
	September	4	0	5	0	1	0	2	0	5	0	8	0	2	0	3	0	...	....	...	....	...	840
	October	5	0	5	0	1	0	2	0	5	0	8	0	2	0	3	0	...	....	...	....	...	868
	November	7	0	6	0	1	0	2	0	4	0	6	0	2	0	2	0	...	....	...	....	...	840
	December	8	0	8	0	1	0	1	0	3	0	4	0	2	0	4	0	...	....	...	....	...	868
	Spring	11	0	15	0	3	0	6	0	15	0	29	0	6	0	7	0	...	S. 45 54 W.	.20½	S. 17 W.	.09	2576
	Summer	5	0	10	0	3	0	8	0	16	0	33	0	8	0	9	0	...	S. 39 36 W.	.37	S. 27 W.	.25½	2576
	Autumn	16	0	16	0	3	0	6	0	14	0	22	0	6	0	8	0	...	S. 84 32 W.	.09½	N. 28½ E.	.05½	2548
	Winter	20	0	22	0	3	0	5	0	10	0	15	0	5	0	10	0	...	N. 1 50 W.	.20½	N. 23½ E.	.29	2527
	The year	52	0	63	0	12	0	25	0	55	0	99	0	25	0	34	0	...	S. 63 46 W.	.14	....	...	10227
377. Nos. 375 and 376 combined.[2]	Spring	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 15 W.	.16	S. 27 W.	.10	
	Summer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 30 W.	.32	S. 36 W.	.26	
	Autumn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 62 15 W.	.05	N. 39 E.	.05	
	Winter	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 20 30 E.	.26½	N. 33 E.	.31½	
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 30 W.	09	....	...	
378. Ragusa.	Spring	15	...	16	...	6	...	40	...	3	...	1	...	1	...	4	...	5	S. 86 2 E.	.45	S. 31¼ E.	.16	92
	Summer	19	...	24	...	5	...	16	...	0	...	2	...	0	...	11	...	15	N. 37 49 E.	.43	N. 24 W.	.25½	92
	Autumn	13	...	13	...	5	...	36	...	3	...	10	...	1	...	4	...	6	S. 69 56 E.	.34	S. 12¼ W.	.23	91
	Winter	17	...	33	...	9	...	16	...	1	...	0	...	2	...	4	...	8	N. 51 31 E.	.55	N. 15 E.	.24½	90
	The year[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 12 E.	.38	....	...	365

[1] Separate months and seasons for all the years except 1783 and 1784.
[2] Resultants combined by plotting
[3] Computed from the resultants for the seasons.

(Nos. 379 to 381.) **Italy, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.	Number of days.
379. Constantinople.[1]	Spring	1	...	113	...	3	...	0	...	0	...	63	...	2	...	2	...	0	N. 42° 46′ E.	.28	N. 22° W.	$.02\frac{1}{2}$	154
	Summer	0	...	$138\frac{1}{2}$	...	1	...	0	...	1	...	42	...	1	...	$\frac{1}{2}$	...	0	N. 45 7 E.	.52	N. $42\frac{3}{4}$ E.	.25	122
	Autumn	0	...	$94\frac{1}{2}$	...	$1\frac{1}{2}$	...	0	...	12	...	$72\frac{1}{2}$	...	0	...	$1\frac{1}{2}$	...	0	N. 74 10 E.	.10	S. 33 W.	.20	121
	Winter	$6\frac{1}{2}$	...	$99\frac{1}{2}$	...	3	...	$\frac{1}{2}$	...	$1\frac{1}{2}$	...	67	...	3	...	0	...	0	N. 40 18 E.	.20	S. 66 W.	.08	181
	The year	30	4	1734	44	34	0	0	2	58	24	940	14	24	0	16	0	0	N. 47 19 E.	.27	....	...	578
380. Black Sea (west of longitude 35° E.).	January, February, March	133	195	256	118	55	38	42	99	126	131	136	61	57	80	95	93	189	N. 20 50 E.	.13	N. $35\frac{1}{2}$ E.	.10	635
	April, May, June	95	96	119	67	90	113	169	180	200	158	194	121	147	149	208	99	505	S. 38 23 W.	$.12\frac{1}{2}$	S. 25 W.	.15	735
	July, August, September	338	392	494	376	236	177	161	129	145	274	204	150	247	387	579	392	553	N. 6 42 W.	$.23\frac{1}{2}$	N. 4 W.	$.19\frac{1}{2}$	1745
	October, November, December	260	355	501	271	214	167	234	323	417	563	526	261	167	182	193	167	414	S. 3 39 E.	.10	S. 8 E.	.14	1738
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 19 54 W.	.04	....	...	4853
381. Black Sea (east of longitude 35° E.).	January, February, March	1	3	1	1	3	0	2	3	1	1	1	0	1	6	6	0	1	N. 37 34 W.	.19	N. $22\frac{1}{2}$ W.	16	11
	April, May, June	7	7	26	8	12	8	10	4	10	15	27	8	10	12	10	6	45	S. 29 45 W.	.05	S. $31\frac{1}{2}$ E.	$.05\frac{1}{2}$	75
	July, August, September	2	15	29	13	7	7	10	17	5	19	19	21	14	10	11	5	52	S. 86 9 W.	.05	S. 35 E.	.01	86
	October, November, December	3	2	5	4	0	3	9	3	3	4	7	6	2	3	6	1	33	S. 21 24 W.	.09	S. 15 E.	.09	32
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 48 W.	$.05\frac{1}{2}$	....	...	204

[1] The following remarks by Mr. Dwight accompanied these observations :—

"In regard to my record of the winds, I must say that if I had been situated where I had a high vane to guide me, the table would probably have shown some slight veerings to the east or west, which do not now appear. There is, however, no doubt of the fact that the wind here, as a general thing, blows either from the northeast or southwest. A wind from either of the four cardinal points never continues long in Constantinople. During the fifteen or sixteen years that I have been here, I have noticed that our prevailing wind in summer is northeast. Indeed, from July to October it is so constantly and regularly from that quarter as to be almost a monsoon; and during that period the nights are very apt to be calm. The wind begins to blow gently soon after sunrise, and it increases until, say two o'clock, when it not unfrequently blows very strong, and then gradually dies away, and soon after sunset it becomes calm again. During the prevalence of this wind in summer, the atmosphere is usually clear, or, at least, there are only flying clouds, without rain ; but in winter the north wind always brings clouds and rain. When the south wind blows in summer, it is usually a mere land breeze, and I have often myself observed, in passing up the Bosphorus on a summer's day, when the wind is southwest at the entrance of the Bosphorus, into the Sea of Marmora, it is northeast at the northern end of the same strait, *i. e.* as it issues from the Black Sea. I have known it to blow all day thus in opposite directions, the two winds meeting at the middle of the strait, where it was perfectly calm.

"One fact you will probably notice from my table, and that is, that there is far more southerly wind in winter than in summer. And this leads me to say a word in reference to your question, whether I know of any local cause, besides the direction of the straits, that would affect the wind? About seventy or eighty miles south of us is the high range of Mount Olympus (not Thessalian, but Bythnian), whose summit is at least eight thousand feet above the sea level, and, of course, in winter it is covered with an immense mass of snow. This has been supposed to be the chief cause of our having so much southerly wind in winter. I do not give this as my opinion, however, but I simply state the fact of such a mountain being in such a relative position to the capital, and also an inference that has been drawn from that fact. I have always noticed that our coldest weather in winter comes when the southerly wind first begins to blow, which I account for on the supposition that such a wind brings first over us the frozen atmosphere of Olympus, and other high ranges of mountains in the interior. But if the wind continues two or three days (and it sometimes does two or three weeks uninterruptedly in winter), it is sure to bring mild and almost summer weather. The barometer here invariably sinks with a southerly wind, and the rain-point is much higher with a northerly than with a southerly wind. I have sometimes noticed an alarming fall in the barometer, but I soon learned not to anticipate any unusual storm from that, if the wind was just coming from the south or southwest. Our heaviest blows and our most copious rains ordinarily come just as the wind is changing from a southerly to a northerly direction.

"As you are interesting yourself in the study of the winds, I will just mention one more fact, though an isolated one. (I wish I had more of them.) Three years ago I was in Smyrna, in the autumn, when we had one of the most dreadful gales I have experienced on these shores. It came in the night, and blew for four or five hours, I think, with the greatest violence, so that much damage was done to the shipping. I took particular notice of the wind, and found that the same gale had been felt, if possible, still more severely in Constantinople, though somewhat later, *i. e.* two or three hours perhaps ; and an observant sea captain of my acquaintance, who happened to be off this port at the time, informed me that the wind here was from the southwest, *i. e.* directly opposite that of Smyrna. I must say, however, that as I took no note of it at the time, I am not positively certain it was later at Constantinople. It may have been so much earlier instead of later, though my strong impression is that my first statement is correct. The main point, however, to which my mind was directed, was the fact that in the same gale the wind blew from opposite quarters at Smyrna and at Constantinople. The distance between the two cities, by sea, is estimated at about 350 miles, though by an air line it must be considerably less."

(Nos. 382 to 396(*a*).) **Southeastern Russia, Asia Minor and Trans-Caucasia.**

Observed at the following places, viz.:—

Alagyr, Russia, during the months of October and November, 1853.

Alexandropol, Trans-Caucasia, during the years 1853, 1858 to 1865 inclusive, and the summer and autumn of 1852.

Alexandrovskaya, Stanitza, Russia, by Dr. Land, during the years 1848, 1849 and 1850.

Bakou, Trans-Caucasia, during the years 1852, 1853, 1865, 1866, 1870, 1871; the two latter years by Morganoff and Martschenko.

Derbend, Russia, during the years 1852, 1853.

Grosnoe, Russia, during the years 1870, 1871, by Toptschewski and Klossowski.

Gudaur, Trans-Caucasia, by Federof, three years, 1870 to 1872.

Koutais, Trans-Caucasia, from January, 1852, to August, 1853, inclusive.

Poti, Trans-Caucasia, during the years 1870, 1871, by Lupanoff.

Redut-Kaleh, Trans-Caucasia, from December, 1852, to November, 1853, inclusive.

Sevastopol, Russia, during the years 1865 and 1866, by Seredovitch.

Simferopol, Russia, by Milhausen, during a period of 29 years, 1822 to 1853 inclusive.

Stanitza. See Alexandrovskaya.

Stavropol, from December, 1864, to November, 1866, inclusive.

Tiflis, Trans-Caucasia, at the Observatory, hourly, from June, 1844, to May, 1847, December, 1849, to November, 1851, December, 1852, to November, 1853, and December, 1856, to November, 1857, all inclusive.

Trebizond, Asia Minor, during the year 1836.

Wladikawkas, Russia, during the year 1872.

NOTE.—By "Russia" in the heading of this chapter is intended Russia in Europe, north of the Caucasian chain; and by Trans-Caucasia, the Russian provinces south of the Caucasian chain.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days
		North.	N.E. or between N. & E.	East.	S.E. or between S. & E.	South.	S.W. or between S. & W.	West	N.W. or between N. & W.	Calm or variable.			Direction.	Force.	
382. Sevastopol.	Spring	106	71	70	32	81	49	19	108	200	N. 7° 45′ E.	.13	N. 79° W.	.05	
	Summer	63	68	96	30	47	31	24	175	202	N. 1 43 W.	.20	N. 42 W.	.11	
	Autumn	64	102	123	45	49	37	26	114	168	N. 40 39 E.	.20	N. 65 E.	.07	
	Winter	76	128	42	53	104	61	22	23	211	S. 88 49 E.	.12	S. 23½ E.	.14	
	The year	309	369	331	160	281	178	91	420	781	N. 28 52 E.	.14			
383. Simferopol, 1822 to 1853.	The year	10	24	68	37	12	17	42	28	123	S. 84 47 E.	.10½	....	...	10592
384. Simferopol, 1822 to 1834.	January	647	716	3580	1640	716	623	1455	623	...	S. 76 09 E.	.30	N. 77¼ E.	.08	403
	February	831	1345	3839	1394	587	611	953	440	...	N. 88 44 E.	.41	N. 63½ E.	.22	367
	March	404	869	2202	1454	909	586	1818	1758	...	S. 75 44 E.	.04	N. 66 W.	.20½	403
	April	309	808	2660	1235	713	380	2446	1449	...	N. 54 44 E.	.01	N. 66 W.	23	390
	May	186	239	2207	1729	745	612	3112	1170	...	S. 32 36 W.	.14½	S. 83¼ W.	.39	403
	June	194	242	3099	1550	557	654	3026	678	...	S. 17 23 E.	.13	S. 27¾ W.	.18	390
	July	165	220	2417	2253	467	797	3241	440	...	S. 1 11 E.	.20	S. 62¼ W.	.24	403
	August	588	402	4365	1796	248	248	1765	588	...	S. 83 37 E.	.36	N. 71¼ E.	.15	403
	September	635	525	4751	2017	221	166	994	691	...	S. 86 58 E.	.49½	N. 78 E.	.31	390
	October	610	707	3220	1415	2024	439	1073	512	...	S. 5 6 E.	.35	S. 39 E.	.12½	403
	November	609	641	3141	1955	1122	801	1378	353	...	S. 5 7 E.	.33	S. 34½ E.	.10½	390
	December	609	748	4432	1607	914	665	803	222	...	S. 75 22 E.	.48	S. 82 E.	.24⅓	403
	Spring	300	639	2356	1473	789	526	2459	1459	...	S. 1 55 W.	.04	N. 78¼ W.	.22½	1196
	Summer	316	288	3294	1866	424	566	2677	569	...	S. 47 42 E.	.18	S. 68 W.	.09	1196
	Autumn	618	624	3704	1796	1122	469	1148	519	...	S. 70 5 E.	.38	S. 70¼ E.	.14½	1183
	Winter	696	936	3950	1547	739	633	1070	428	...	S. 81 0 E.	.39	N. 81½ E.	.16½	1173
	The year	482	622	3326	1670	769	549	1839	743	...	S. 68 0 E.	.23½	....	...	4748
385. Southern Crimea.[1]	Spring	256	391	1248	768	475	312	1249	838	200	S. 2 42 E.	.02	N. 77 W.	.16½	
	Summer	221	212	1743	963	259	314	1362	459	202	S. 54 58 E.	.14	S. 62½ W.	.05	
	Autumn	373	410	1975	943	610	271	600	373	168	S. 73 54 E.	.34	S. 81½ E.	.07	
	Winter	424	596	1517	826	473	377	557	237	211	S. 78 32 E.	.30	S. 89 E.	.13½	
	The year	1309	2769	7131	3860	1481	1878	4291	3220	13081	N. 89 55 E.	.10½			

[1] Sevastopol and Simferopol combined, using only one-half of the numbers for Simferopol in order to give them their proper weight.

(Nos. 386 to 390.) **Southeastern Russia, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
386. Trebizond.[1]	Spring	10	4	81	0	2	2	18	67	...	N. 16° 42′ E.	.32	N. 47° W.	.06	92
	Summer	3	1	83	2	3	1	10	79	...	N. 18 49 E.	.33	N. 36 W.	.05	92
	Autumn	1	0	94	2	9	4	2	41	...	N. 74 47 E.	.42	S. 59 E.	.31	91
	Winter	5	0	49	0	21	8	10	59	...	N. 9 8 W.	.35	N. 68 W.	.21	90
	The year	9	5	317	4	55	15	40	246	...	N. 37 40 E.	.23	....	...	365
387. Stavropol.	Spring	23	23	73	139	42	29	91	41	91	S. 26 57 E.	.19	S. 65 E.	.07	
	Summer	23	25	85	60	25	44	121	45	124	S. 56 8 W.	.08½	N. 45 W.	.13	
	Autumn	18	30	108	83	43	42	55	20	147	S. 48 5 E.	.22	S. 88½ E.	.14	
	Winter	15	4	37	80	60	48	91	32	173	S. 22 7 W.	.22	S. 59 W.	.12	
	The year	79	82	303	362	170	163	358	138	535	S. 8 33 E.	.14			
387(*a*). Poti.	See Addendum at the end of this Zone.														
388. Redut-Kaleh.[2]	Spring	0	6	41	57	0	51	35	25	61	S. 3 22 W.	.20	S. 29 W.	.13	92
	Summer	0	4	8	16	0	50	27	34	137	S. 72 52 W.	.23	N. 86½ W.	.27½	92
	Autumn	2	5	35	44	0	21	8	33	125	S. 53 55 E.	.11	N. 60 E.	.04	91
	Winter	0	7	51	89	0	12	6	8	94	S. 31 38 E.	.44	S. 32 E.	.34	90
	The year	2	22	135	206	0	134	76	100	...	S. 30 48 E.	.10			
389. Koutais.[3]	Spring	12	16	96	3	3	24	32	2	...	N. 87 25 E.	.22	....	...	92
	Summer	6	4	31	4	3	38	24	0	...	S. 30 46 W.	.10	....	...	92
	Winter	32	19	95	5	1	8	7	6	...	N. 67 27 E.	.38	....	...	90
390. Alexandrovskaya.	January	263	1830	3067	387	307	1373	2380	393	...	N. 74 23 E.	.10½	....	...	93
	February	373	783	2033	903	660	1740	2950	553	...	S. 48 9 W.	.18	....	...	85
	March	680	1557	4170	920	193	757	1390	333	...	N. 80 23 E.	.38	....	...	93
	April	940	583	4737	1013	113	1067	1080	467	...	N. 88 22 E.	.37	....	...	90
	May	483	473	5743	507	247	557	1800	190	...	S. 89 23 E.	.41	....	...	93
	June	397	527	1400	1817	407	1867	3173	413	...	S. 41 50 W.	.26	....	...	90
	July	883	750	2773	1433	150	537	2553	920	...	N. 54 19 E.	.09	....	...	93
	August	510	1107	3183	1063	360	1343	1800	633	...	S. 78 14 E.	.15½	....	...	93
	September	373	520	4537	1743	123	637	1587	480	...	S. 79 12 E.	.38	....	...	90
	October	193	1090	3323	2247	127	490	2190	340	...	S. 73 37 E.	.30	....	...	93
	November	153	1443	3137	983	343	1120	2070	750	...	S. 85 1 E.	.14½	....	...	90
	December	117	1043	2400	517	267	1347	3533	767	...	S. 82 40 W.	.15	....	...	93
	Spring	701	871	4883	813	184	794	1423	330	...	N. 86 33 E.	.38½	N. 77 E.	.24	276
	Summer	597	795	2452	1438	306	1249	2509	655	...	S. 16 47 E.	.06	S. 78½ W.	.14	276
	Autumn	240	1018	3666	1658	198	749	1949	543	...	S. 78 11 E.	.27½	S. 76½ E.	.12	273
	Winter	251	1219	2500	606	411	1487	2954	571	...	S. 58 55 W.	.07	S. 88¼ W.	.21	271
	The year	447	976	3375	1129	275	1070	2209	520	...	S. 78 9 E.	.15½	....	...	1096

[1] Rev. N. Benjamin, in a letter to the author, makes the following remarks in regard to the winds at this place, having resided there for some years:—

"The prevailing winds at Trebizond are northwest winds and easterly winds. The sirocco also sometimes prevails. Rain storms, which are very frequent, are almost invariably with a wind blowing from the northwest. The clear and pleasant weather was almost as uniformly with an easterly wind, and I also quite generally observed that the barometer was lower with an east wind when quite clear, than with a northwest, or a north wind accompanied by an obscure sky, and even with rain. So that we had often the extraordinary phenomenon of the barometer rising as the storm was coming on, and standing very high during a protracted rain, and sinking on the return of clear weather.

"I have not been able to form any satisfactory conclusions in regard to the local causes which affect the direction of the winds at Trebizond, and can only say that the whole country in the rear of that place is mountainous to an unusual degree."

[2] M. Khanikoff, in a letter to the author, gives the following directions of the resultants for the different seasons of 1852 and 1853, and for the entire years, viz.:—

	1852.	1853.
Spring	S. 42° 25′ W.	S. 3° 22′ W.
Summer	S. 88 49 W.	S. 72 53 W.
Autumn	S. 29 28 E.	S. 53 57 E.
Winter	N. 89 4 E.	S. 58 22 E.
The year	S. 17 29 E.	S. 19 49 E.

[3] Chevalier Khanikoff makes the directions of the resultants for the year 1852 as follows, viz.: Spring, N. 78° 38′ W.; Summer, S. 89° 14′ W.; Autumn, N. 40° 2′ E.; Winter, N. 61° 46′ E.; The year, N. 2° 22′ E.

(Nos. 391 to 396(*a*).) **Southeastern Russia, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
391. Alexandropol.[1]	January	0	2	0	0	0	1	0	1	27					
	February	1	2	0	0	0	1	0	0	24					
	March	1	3	1	0	0	1	0	0	25					
	April	1	7	0	0	0	4	0	1	17					
	May	0	7	1	0	0	4	1	1	17					
	June	1	11	0	0	0	2	0	1	15					
	July	1	17	1	0	0	1	0	0	11					
	August	0	18	1	0	0	2	0	0	10					
	September	0	12	0	0	0	2	0	1	15					
	October	1	6	0	0	0	2	0	0	22					
	November	0	3	0	0	0	1	0	0	26					
	December	1	2	0	0	0	1	0	0	27					
	Spring	48	408	48	0	0	216	24	48	1416	N. 30° 3′ E.	.12	S. 52½° W.	.09½	736
	Summer	94	1171	86	25	29	130	15	37	885	N. 44 37 E.	.46	S. 48½ W.	.25	828
	Autumn	41	605	6	8	10	141	6	35	1599	N. 39 16 E.	.20	S. 52 W.	.01	819
	Winter	48	144	0	0	0	72	0	24	1872	N. 16 18 E.	.05	S. 46½ W.	.17	722
	The year[5]	...	...	...	...	...	...	...	...	...	N. 39 49 E.	.21			

391(*a*). Gudaur. See Addendum at the end of this Zone.
391(*b*). Wladikawkas. " " " " "
391(*c*). Grosnoe. " " " " "

Place of observation.	Time of the year.	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.	Direction of resultant.	Ratio.	Monsoon direction.	Force.	Number of days.
392. Tiflis.	January	141	22	106	100	37	29	156	409	...	....	...	....	...	124
	February	71	14	92	71	44	36	169	504	...	....	...	....	...	113
	March	104	25	177	120	35	28	123	387	...	....	...	....	...	124
	April	127	50	177	149	45	31	118	303	...	....	...	....	...	120
	May	138	41	125	142	45	25	114	370	...	....	...	....	...	124
	June	130	27	71	86	35	19	112	521	...	....	...	....	...	120
	July	85	60	147	159	52	54	126	316	...	....	...	....	...	124
	August	126	30	183	245	99	17	63	236	...	....	...	....	...	124
	September	140	12	108	211	123	30	65	311	...	....	...	....	...	120
	October	90	19	178	149	41	33	106	384	...	....	...	....	...	124
	November	97	10	56	78	66	14	169	509	...	....	...	....	...	120
	December	189	47	65	33	14	26	256	370	...	....	...	....	...	124
	Spring	695	187	556	777	496	141	319	1534	589	N. 19 7 W.	.15½	S. 59 E.	.07	552
	Summer	756	181	425	931	551	172	319	1983	526	N. 33 28 W.	.20	S. 4 W.	.02	552
	Autumn	518	74	484	1062	467	119	353	1865	863	N. 33 37 W.	.13	S. 25 E.	.08	546
	Winter	770	162	410	426	209	102	507	1887	1114	N. 33 37 W.	.35	N. 37½ W.	.16	542
	The year	2739	604	1875	3196	1723	534	1498	7269	3092	N. 31 52 W.	.21	....	...	2192
393. Northern Trans-Caucasia.[2]	Spring	...	...	...	...	...	...	...	...	...	N. 82 E.	.12	S. 57½ E.	.07	1748
	Summer	...	...	...	...	...	...	...	...	...	N. 8 W.	.06	N. 86½ W.	.07	1840
	Autumn	...	...	...	...	...	...	...	...	...	N. 71 E.	.11	S. 67 E.	.05	1729
	Winter	...	...	...	...	...	...	...	...	...	N. 77½ E.	.07	S. 14 E.	.04	1715
	The year	...	...	...	...	...	...	...	...	...	N. 46 E.	.08	....	...	7032
394. Alagyr.	Oct. & Nov.	26	16	5	30	26	17	20	38	9	N. 76 43 W.	.12	....	...	61
395. Derbend.[3]	Spring	17	2	10	41	31	3	19	35	18	S. 16 3 W.	.11	....	...	92
	Summer	35	1	18	24	33	2	57	13	27	S. 78 47 W.	.15	....	...	92
	Autumn	17	1	4	26	38	8	74	11	7	S. 61 46 W.	.40	....	...	91
	Winter	5	1	1	36	50	7	52	18	13	S. 34 27 W.	.41	....	...	90
	The year	74	5	33	127	152	20	202	77	65	S. 49 2 W.	.25	....	...	365
396. Bakou.[4]	Spring	377	23	19	22	264	93	14	50	221	N. 37 40 W.	.10	S. 17 W.	.09	
	Summer	431	49	11	39	169	48	18	67	130	N. 5 17 W.	.29½	N. 3½ E.	.12	
	Autumn	327	41	33	62	178	78	18	78	174	N. 8 15 W.	.13½	S. 24 E.	.04	
	Winter	365	39	25	40	155	84	25	40	286	N. 10 8 W.	.17	N. 79 E.	.00½	
	The year[5]	...	...	...	...	...	...	...	...	...	N. 11 22 W.	.17			

396(*a*). Bakou, 1870–71. See Addendum at the end of this Zone.

[1] Months for the last 8 years only. Chevalier Kahnikoff makes the directions of the resultants for the year 1852 as follows, viz.: Spring, N. 6° 28′ E.; Summer, N. 1° 45′ E.; Autumn, N. 52° 57′ W.; Winter, N. 10° 55′ W.; The year, N. 8° 16′ W.

[2] Resultants at Nos. 388 to 392 inclusive, combined by plotting.

[3] Chevalier Kahnikoff makes the direction of the resultants for the year 1852 as follows: Spring, S. 31° 49′ W.; Summer, N. 79° 34′ W.; Autumn, S. 54° 22′ W.; Winter, S. 87° 22′ W.; The year, S. 71° 10′ W. He does not give the relative prevalence, so that we cannot combine his results with those above for 1853.

[4] Chevalier Kahnikoff makes the direction of the resultants for the year 1852 as follows: Spring, N. 51° 5′ W.; Summer, N. 5° 16′ E.; Autumn, N. 24° 17′ E.; Winter, N. 76° 22′ W.; The year, N. 20° 14′ W. He does not give the relative prevalence, so that we cannot combine his results with those above for 1853.

[5] Computed from the resultants for the seasons.

(Nos. 397 to 402.) **Central and Eastern Asia.**

Observed at the following places, viz.:—

Foordan, Mantchooria, by Dr. H. Fritsche, from July, 1870, to January, 1871.

Hakodade, Island of Jesso, Japan, during the years 1840, 1841 and 1842; and by officers of the U. S. Naval Expeditions under command of Commodores Perry and Rogers, in the summer of 1853 and 1856.

Krasnovodsk, from December, 1869, to August, 1870, and from December, 1870, to February, 1871, both inclusive, by Denissof and Pavlof-Sylvansky.

New Chwang, Mantchooria, from November, 1861, to November, 1862.

Novo Petrowsk, Eastern shore of the Caspian, during the years 1849 to 1856 inclusive.

Olga Bay, Province of Eastern Siberia, by Dr. Wulfius, 5 months, December, 1858, to April, 1859.

Possiet Bay, Province of Eastern Siberia, by Tscherkasskij, 2 years, 1860–61.

Taschkent, Central Asia, one year, 1868. Observed from 6 o'clock A. M. to 10 o'clock P. M. every two hours, with omissions. Observer's name unknown. Also, by Michelson, three times a day, in 1871, for January and February, and from June to December inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
397. Novo Petrowsk.	January	4	4	5	11	2	1	1	2	1	....	...	....	...	248
	February	4	2	7	9	1	0	2	2	1	....	...	....	...	226
	March	6	3	5	10	1	1	2	3	0	....	...	....	...	248
	April	4	3	7	7	2	1	3	3	0	....	...	....	...	240
	May	5	4	5	6	2	2	2	4	1	....	...	....	...	248
	June	5	4	4	4	2	2	4	4	1	....	...	....	...	240
	July	6	4	3	5	1	2	4	5	1	....	...	....	...	248
	August	5	3	5	6	3	2	3	3	1	....	...	....	...	248
	September	3	3	5	8	2	1	2	5	1	....	...	....	...	240
	October	3	2	4	11	3	1	2	4	1	....	...	....	...	248
	November	3	4	5	12	1	0	1	3	1	....	...	....	...	240
	December	4	4	5	10	1	0	2	4	1	....	...	....	...	248
	Spring	15	10	17	23	5	4	7	10	1	N. 77° 50′ E.	.26	N. 7½° E.	.03	736
	Summer	16	11	12	15	6	6	11	12	3	N. 30 16 E.	.14½	N. 61 W.	.21	736
	Autumn	9	9	14	31	6	2	5	12	3	S. 78 40 E.	.31	S. 30 E.	.10	728
	Winter	12	10	17	30	4	1	5	8	3	S. 87 59 E.	.38	S. 74 E.	.13	722
	The year	52	40	60	99	21	13	28	42	10	N. 83 53 E.	.25	....	...	2922
397(*a*). Krasnovodsk.	See Addendum at the end of this Zone.														
398. Central Trans-Caucasia.[1]		...	...	...	...	...	...	...	...	...	Northeast'rly				
398(*a*). Taschkent, 1868.	Spring	8	15	2	2	5	7	5	7	49	N. 0 25 W.	.12	N. 61 W.	.12	
	Summer	0	3	16	2	0	1	9	0	69	East	.09	S. 15 W.	.06	
	Autumn	0	3	23	1	0	0	8	0	65	N. 85 29 E.	.18	S. 57 E.	.09	
	Winter	5	10	17	2	1	1	7	3	54	N. 54 33 E.	.19	N. 44 E.	.07	
	The year	13	31	58	7	6	9	29	10	237	N. 59 49 E.	.12			
398(*b*). Taschkent, 1871.	See Addendum at the end of this Zone.														
399. New Chwang.	January	9	8	0	0	1	1	0	1	0					
	February	6	4	0	3	4	4	1	6	0					
	March	5	6	1	3	3	4	4	5	0					
	April	5	4	1	1	3	9	3	3	1					
	May	3	4	1	3	5	10	1	4	0					
	June	1	3	1	3	4	8	6	1	3					
	July	2	1	3	6	11	5	1	0	2					
	August	4	9	1	11	4	2	0	0	0					
	September	4	6	1	4	8	5	0	2	0					
	October	6	6	1	2	4	4	4	2	2					
	November	7	6	2	4	6	2	0	1	2					
	December	7	8	4	8	2	1	0	1	0					
	Spring	13	14	3	7	11	23	8	12	1	S. 86 49 W.	.16	S. 88 W.	.22	
	Summer	7	13	5	20	19	15	7	1	5	S. 20 35 E.	.31	S. 10 E.	.29½	
	Autumn	17	18	4	10	18	11	4	5	4	N. 87 14 E.	.09½	N. 81 E.	.03½	
	Winter	22	20	4	11	7	6	1	8	0	N. 33 24 E.	.34½	N. 24½ E.	.32	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 88 0 E.	.06			

[1] For Chevalier Kahnikoff's remarks on the winds of this region see Zone 9, No. 367(*a*).

[2] Computed from the resultants for the seasons.

(Nos. 400 to 402.) **Central and Eastern Asia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
400. Foordan.[1]															
400(*a*). Possiet Bay.	See Addendum at the end of this Zone.														
400(*b*). Olga Bay.	"	"	"	"	"										
401. Hakodade, 1840, 1841, 1842.	January	2	0	1	2	0	0	8	17	1	....	...	....	...	93
	February	2	0	2	2	0	0	9	10	3	....	...	....	...	85
	March	2	0	4	4	1	1	7	7	5	....	...	....	...	93
	April	1	0	3	8	2	3	6	4	3	....	...	....	...	90
	May	1	0	4	11	4	5	4	1	1	....	...	....	...	93
	June	0	0	3	11	4	4	4	2	2	....	...	....	...	90
	July	1	0	5	11	3	5	4	1	1	....	...	....	...	93
	August	1	0	2	12	3	4	5	2	2	....	...	....	...	93
	September	2	0	2	7	1	1	7	8	2	....	...	....	...	90
	October	2	0	3	4	2	1	9	10	0	....	...	....	...	93
	November	2	0	2	2	1	1	10	11	1	....	...	....	...	90
	December	2	1	1	1	1	1	11	12	1	....	...	....	...	93
	Spring	4	0	11	23	7	9	17	12	9	S. 23° 23′ W.	.20	S. 45° E.	.20	276
	Summer	2	0	10	34	10	13	13	5	5	S. 12 26 E.	.42	S. 40 E.	.48	276
	Autumn	6	0	7	13	4	3	26	29	3	N. 70 58 W.	.37½	N. 40 W.	.21	273
	Winter	6	1	4	5	1	1	28	39	5	N. 58 51 W.	.62½	N. 41 W.	.47	271
	The year	18	1	32	75	22	26	84	85	22	S. 79 13 W.	.21½	....	...	1096
402. Hakodade, 1853 & '56.	Summer	2	8	18	48	4	12	13	11	21	S. 42 26 E.	.31	......	...	29

[1] The following is an extract from a letter from Dr. Frietsche to Dr. W. A. P. Martin, of Pekin:—

"I remained more than six months at a small place half way between the lake Hanka and Vladivostok, near the ruins of the town marked on the Mantchoo maps under the name of Foordan. The village lies in the broad valley of the river Sooi-fun, a low range of hills separating it from the lake Hanka; on the south it is also protected by a wooded range of hills, across which the river Sooi-fun runs through a narrow pass. I arrived at Foordan on the 10–22 July, 1870. In this season the S. E. winds reign in the country, and they bring with them rain clouds. Rain was frequent in the Sooi-fun valley, but was not accompanied by thick fogs, as it is in the country near the sea. The wind was not so strong as on the sea-shore, or on Lake Hanka, which is not protected by hills from the S. E. The rainy season continued, with some changes, up to the end of autumn; but in October, and up to the middle of November, the weather was generally fine, warm and mild; although there was a slight fall of snow sometimes. In December N. W. winds began to blow, bringing severe cold with them—the temperature was as low as —30° Re. Still in the Foordan region the winter winds were not so continuous as in the Valdivostok and Hanka. The next year the southerly winds began early in April, but they were also intermixed with northerly winds."

(Nos. 403 to 407.) **Pacific Ocean**, west of longitude 180°.

Computed from observations for an aggregate period of five years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
403. Longitude 125° to 135° E.	Spring	22	15	61	25	42	10	27	13	66	13	27	2	31	7	9	1	66	S. 66° 6′ E.	.19	....	...	146
	Summer	22	10	149	39	145	5	85	10	157	11	93	16	96	3	26	6	93	S. 49 13 E.	.21	....	...	322
404. Longitude 120° to 150° E.	Autumn	6	0	11	10	3	1	7	4	3	0	0	0	0	3	6	0	0	N. 59 49 E.	.43	....	...	18
	Winter	6	2	0	1	4	0	0	1	2	1	3	2	3	6	5	7	0	N. 50 40 W.	.37	....	...	14
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 37 14 E.	.06			
405. Longitude 135° to 140° E.	Spring	56	0	62	17	42	1	18	6	50	43	50	19	46	14	30	8	56	S. 72 50 W.	.07	....	...	173
	Summer	89	0	178	52	54	15	36	12	151	61	151	31	127	36	25	17	147	S. 58 38 W.	.05	....	...	394
406. Longitude 140° to 145° E.	Spring	11	3	13	9	17	4	10	13	28	2	27	4	33	16	14	5	12	S. 52 9 W.	.19	....	...	74
	Summer	7	0	14	1	17	5	7	3	29	6	19	3	9	0	1	0	7	S. 14 18 E.	.33	....	...	43
407. Longitude 145° to 150° E.	Spring	63	40	58	29	86	41	86	46	154	31	138	69	107	17	76	30	33	S. 21 1 W.	.19	....	...	368
	Summer	15	10	48	28	37	10	16	11	38	5	32	1	19	4	9	2	3	S. 80 37 E.	.27	....	...	96

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 10.

Sevastopol, observed by Admiral Arkass, from 1840 to 1851, twelve years.
Nikita, south coast of Crimea, in 1830, 1855 and 1858–65, ten years, old style.
Karabagh, south coast of Crimea, from July, 1866, to September, 1867.
Crimea.[1]

	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
383(*a*). Sevastopol. Number of winds in 1000	January	104	232	267	35	59	93	151	59	N. 51° E.	.25½		
	February	125	150	224	76	63	161	150	51	N. 66 E.	.09		
	March	103	148	238	69	57	113	192	80	N. 39 E.	.10		
	April	60	74	281	74	71	159	208	73	S. 10 E.	.07½		
	May	48	72	297	36	71	178	250	48	S. 22 W.	.09½		
	June	47	71	270	47	59	176	306	24	S. 43 W.	.14		
	July	46	58	309	23	24	173	332	35	S. 71 W.	.12		
	August	79	90	347	12	23	112	257	79	N. 17 E.	.09		
	September	68	80	340	12	46	147	250	57	N. 59 E.	.01½		
	October	103	103	306	34	68	137	181	68	N. 66 E.	.08½		
	November	131	145	254	59	84	157	109	61	N. 74 E.	.14		
	December	138	265	219	23	69	104	115	67	N. 41 E.	.28½		
	Spring	70	98	272	60	66	150	217	67	S. 20 E.	.04	S. 30° W.	.06½
	Summer	57	73	308	28	36	154	298	46	S. 69 W.	.06½	S. 64 W.	.11½
	Autumn	101	109	300	35	66	147	180	62	N. 70 E.	.08	West	.03
	Winter	122	216	237	44	64	119	139	59	N. 49 E.	.17½	N. 45 E.	.15½
	The year	87	123	281	41	57	143	206	62	N. 56 E.	.05½		
383(*b*). Nikita. Number of winds in 1000.	Spring	70	139	342	72	48	131	111	88	N. 80 E.	.23	N. 88 E.	.09
	Summer	40	115	296	148	79	152	110	60	S. 60 E.	.25½	S. 27 E.	.18½
	Autumn	138	105	278	76	53	137	152	61	N. 66 E.	.12½	N. 45 W.	.03
	Winter	135	176	176	57	40	115	187	114	North	.18	N. 46 W.	.20½
	The year	97	137	270	86	54	133	141	82	N. 72 E.	.14½		
383(*c*). Karabagh. Number of winds in 1000.	Spring	92	121	130	45	113	285	168	45	S. 48 W.	.20½		
	Summer	22	64	163	46	170	288	173	74	S. 33 W.	.34½		
	Autumn	77	81	159	93	109	194	221	66	S. 43 W.	.18		
	Winter	129	91	97	43	156	269	145	70	S. 55 W.	.23½		
	The year	80	89	138	57	137	258	178	64	S. 44 W.	.23½		
Crimea. Number of winds in 1000.	Spring	64	117	250	120	85	107	153	104	S. 78 E.	.12		
	Summer	47	80	247	134	68	131	213	80	S. 21 E.	.10		
	Autumn	83	143	297	120	71	95	117	74	N. 87 E.	.24½		
	Winter	103	182	250	114	69	87	113	82	N. 71 E.	.24		
	The year	74	131	261	122	73	105	149	85	S. 88 E.	.15½		

	Time of the year.	Relative Prevalence and Force of Winds from the Different Points of the Compass. North. No. of obs.	North. Force.	N. E. No. of obs.	N. E. Force.	East. No. of obs.	East. Force.	S. E. No. of obs.	S. E. Force.	South. No. of obs.	South. Force.	S. W. No. of obs.	S. W. Force.	West. No. of obs.	West. Force.	N. W. No. of obs.	N. W. Force.	Calm or variable.
387(*a*). Poti, 1870.	January	0	0	3	1.0	62	3.3	0	0	5	1.6	6	3.8	4	4.7	5	4.8	8
	February	0	0	3	1.0	54	2.9	1	1.0	2	3.0	4	2.7	4	7.0	5	4.6	11
	March	0	0	4	1.0	34	4.0	2	1.5	3	1.3	17	3.1	15	3.1	12	2.5	6
	April	0	0	2	1 5	19	3.0	2	3.0	3	3.3	27	4.7	14	3.7	10	3.0	13
	May	0	0	7	1.3	15	2.6	3	1.7	2	2.5	30	3.8	15	2.6	11	3.6	10
	June	0	0	4	2.0	14	2.4	2	3.0	3	2.7	31	3.9	16	3.8	13	3.4	7
	July	0	0	0	0	13	1.4	5	1.4	5	2.2	24	4.7	25	3.0	15	3.3	6
	August	0	0	4	1.5	27	1.9	4	1.5	3	5.3	16	3.5	16	3.2	14	3.0	9
	September	2	1.5	3	1.3	29	2.2	7	2.3	3	3.0	10	3.2	13	3.8	15	3.6	8
	October	0	0	2	1.5	52	3.1	2	3.0	8	2.2	3	3.3	12	4.9	9	4.2	5
	November	0	0	4	1.7	70	2.3	1	1.0	4	1.7	3	3.0	4	2.0	2	4.0	2
	December	0	0	3	2.0	67	3.1	1	1.0	2	4.0	4	3.9	1	4 0	14	3.6	1
	The year	2	1.5	39	1.4	456	2.8	30	1.9	43	2.6	175	3.9	139	3.5	125	3.5	86

[1] Mean of Sympheropol, Sevastopol, Karabagh, Nikita and Ascania Nova. The observations of Sympheropol were given a double value because of the central position and the good quality of the observations. Calculated by Dr. Wl. Köppen in the new Repertorium für Meteorologie, v. i. p. 9.

Addendum to Zone No. 10.—*Continued.*

	Time of the year.	RELATIVE PREVALENCE AND FORCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS.																
		North.		N. E.		East.		S. E.		South.		S. W.		West.		N. W.		
		No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	Calm or variable.
387(*a*). Poti, 1871.	January	1	2.0	1	1.0	60	2.6	1	1.0	1	2.0	4	5.0	9	4.9	12	4.5	4
	February	0	0	0	0	51	1.9	1	2.0	1	4.0	6	5.3	11	5.1	12	3.3	2
	March	0	0	2	1.0	43	2.3	3	1.3	3	2.3	24	3.8	8	4.6	7	2.9	3
	April	1	1.0	9	1.2	15	1.8	2	1.0	3	4.0	17	3.5	13	2.5	18	3.3	12
	May	1	2 0	6	1.0	25	2.6	1	1.0	3	1.7	14	3.5	10	3.4	29	3.5	4
	June	1	2.0	4	1.0	23	2.3	5	2.4	3	5.3	24	4.5	6	3.2	14	2.9	10
	July	1	1.0	1	1.0	11	1.8	4	1.7	13	2.9	26	4.3	23	3.2	7	3.3	7
	August	0	0	2	2.5	17	1.9	9	2.9	6	4.0	30	3.8	12	2.7	10	3.3	7
	September	1	1.0	3	2.7	40	2.8	5	3.2	3	4.3	13	4.1	10	3.6	7	3.1	8
	October	1	1.0	3	2.0	46	3.8	3	2.7	4	3.2	12	4.7	5	4.4	11	3.3	8
	November	0	0	2	3.0	71	3.1	2	2.0	0	0	6	3.2	2	3.5	3	5.3	4
	December	1	3.0	3	1.7	58	2.9	3	2.3	1	3 0	9	4.1	9	5.1	5	4.0	4
	The year	8	1.6	36	1.3	460	2.4	39	2.3	41	3.3	185	3.7	118	3.7	135	3.4	73
391(*a*). Gudaur, 1870.	January	47	2.2	0	0	1	2.0	1	2.0	1	4.0	0	0	2	2.0	0	0	41
	February	18	2.1	4	2.5	3	2.0	0	0	3	4.0	0	0	2	2.0	1	2.0	53
	March	24	2.0	5	2.0	6	2.0	1	2.0	0	0	0	0	3	2.0	1	2.0	53
	April	25	2.2	2	2.0	1	2.0	3	2.0	3	2.7	0	0	3	2.0	1	2.0	45
	May	21	2.5	7	2.0	6	2.7	0	0	3	2.0	0	0	5	2.4	0	0	50
	June	14	3.1	11	3.1	6	2.7	1	2.0	2	2.0	0	0	9	2.7	3	2.7	42
	July	13	3.7	6	3.3	3	3.3	0	0	0	0	1	2.0	8	2.0	2	3.0	45
	August	17	2.7	3	2.0	2	2.0	1	2.0	0	0	0	0	13	2.5	2	3.0	50
	September	8	2.2	5	2.4	0	0	0	0	2	2.0	0	0	5	2.4	2	2.0	64
	October	14	2.1	5	2.4	0	0	0	0	1	2.0	0	0	3	2.7	3	2.0	47
	November	37	2.8	7	2.6	2	5.0	0	0	5	2.0	0	0	0	0	0	0	35
	December	26	2.5	4	2.0	7	2.3	0	0	5	3.2	0	0	1	2.0	0	0	49
	The year	264	2.4	59	2.5	43	2.5	7	2.0	25	2.6	1	2.0	54	2.4	15	2.4	574
1871.	January	35	2.5	1	2.0	2	2.0	4	2.0	7	2.9	0	0	0	0	2	2.0	40
	February	46	2.6	1	2.0	1	2.0	1	2.0	1	2.0	0	0	1	6.0	1	2.0	31
	March	45	2.4	0	0	8	2.2	1	2.0	8	2.2	0	0	2	2.0	0	0	29
	April	22	2.4	1	2.0	13	2.3	0	0	4	2.5	1	2.0	0	0	1	4.0	43
	May	19	2.1	4	3.0	6	2.3	3	2.0	3	2.0	1	2.0	1	2.0	1	2.0	52
	June	30	2.1	1	2.0	2	2.0	4	3.5	2	2.0	0	0	2	3.0	0	0	45
	July	19	2.3	0	0	7	2.0	1	2.0	3	2.0	0	0	6	2.3	0	0	55
	August	31	2.1	1	2.0	10	2.2	1	2.0	3	2.0	0	0	3	2.7	0	0	42
	September	32	2.2	0	0	7	2.0	0	0	3	2.0	0	0	2	2.0	0	0	44
	October	32	2.3	2	3.0	9	2.0	2	2.0	5	2.0	0	0	0	0	1	2.0	36
	November	53	2.0	1	2.0	5	2.0	2	3.0	2	2.0	0	0	4	2.5	1	2.0	18
	December	41	2.0	0	0	14	2.0	4	2.0	9	2.2	0	0	5	2.0	0	0	15
	The year	405	2.3	12	2.5	84	2.1	23	2.3	50	2.2	2	2.0	26	2 5	7	2.3	450
1872.	January	8	1.5	15	1.4	1	1.0	12	1.8	12	1.7	14	1.6	9	1.7	22	1.4	0
	February	19	1.0	12	1.1	0	0	8	1.1	11	1.4	13	1.2	6	1.3	16	1.1	2
	March	12	1.6	8	1.1	5	1.0	2	1.0	26	1.3	14	1.3	14	1.2	12	1.1	0
	April	22	1.9	5	1.8	2	1.5	1	3.0	37	1.5	8	1.2	9	1 7	6	1.5	0
	May	14	2.2	5	2.4	4	2.7	2	3.0	53	1.9	4	1.7	4	1.5	3	1.7	4
	June	14	1.9	9	2.2	2	1.5	3	1.7	35	1.8	13	2.2	9	2.3	3	1.7	2
	July	5	2.4	9	2.3	4	1.7	4	2.2	31	1.5	8	2.1	24	2.5	3	2.0	5
	August	11	2.0	6	2.2	11	2.1	1	2.0	40	2.2	7	1.9	10	2.1	3	3.0	4
	September	10	2.2	6	2.7	5	2.0	2	1.0	37	1.9	8	2.0	9	2.6	3	2.0	10
	October	14	1.7	2	2.5	8	2.1	1	2.0	29	1.8	9	1.8	19	1.7	4	1.5	7
	November	21	1.8	9	1.6	1	2.0	4	1.7	36	2.3	5	2.8	5	1.8	4	1.7	5
	December	13	1.9	6	2.2	3	2.3	5	1.6	29	2.1	16	2.5	6	2.7	15	2.0	0
	The year	163	1.8	92	1.8	46	1.9	45	1.7	376	1.8	119	1.8	124	2.0	94	1.5	39
391(*b*). Wladikaw-kas, 1872.	January	8	1.5	15	1.4	1	1.0	12	1.8	12	1.7	14	1.6	9	1.7	22	1.4	
	February	19	1.0	12	1.1	...	...	8	1.1	11	1.4	13	1.2	6	1.3	16	1.1	2
	March	12	1.6	8	1.1	5	1.0	2	1.0	26	1.3	14	1.3	14	1.2	12	1.1	
	April	22	1.9	5	1.8	2	1.5	1	3.0	37	1.5	8	1.2	9	1.7	6	1.5	
	May	14	2.2	5	2.4	4	2.7	2	3.0	53	1.9	4	1.7	4	1.5	3	1.7	4
	June	14	1.9	9	2.2	2	1.5	3	1.7	35	1.8	13	2.2	9	2.3	3	1.7	2
	July	5	2.4	9	2.3	4	1.7	4	2.2	31	1.5	8	2.1	24	2.5	3	2.0	5
	August	11	2.0	6	2.2	11	2.1	1	2.0	40	2.2	7	1.9	10	2.1	3	3.0	4
	September	10	2.2	6	2.7	5	2.0	2	1.0	37	1.9	8	2.0	9	2.6	3	2.0	10
	October	14	1.7	2	2.5	8	2.1	1	2.0	29	1.8	9	1.8	19	1.7	4	1 5	7
	November	21	1.8	9	1.6	1	2.0	4	1.7	36	2 3	5	2.8	5	1.8	4	1.7	5
	December	13	1.9	6	2.2	3	2.3	5	1.6	29	2.1	16	2.5	6	2.7	15	2.0	
	The year	163	1.8	92	1.8	46	1.9	45	1.7	376	1.8	119	1.8	124	2.0	94	1.5	39

Addendum to Zone No. 10.—*Continued.*

	Time of the year.	Relative Prevalence and Force of Winds from the Different Points of the Compass.																
		North.		N. E.		East.		S. E.		South.		S. W.		West.		N. W.		
		No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	Calm or variable.
391(*c*). Grosnoe, 1870.	January	0	0	4	2.5	22	2.0	13	1.6	4	1.0	12	1.7	29	1.5	9	1.9	0
	February	5	1.6	2	3.0	30	2.2	4	2.7	1	6.0	7	2.0	20	1.8	15	1.3	0
	March	6	1.3	15	2.1	38	1.9	2	2.0	0	0	1	2.0	16	·1.5	14	2.2	1
	April	9	1.6	20	1.7	21	1.6	4	1.5	0	0	5	2.0	21	1.7	10	1.9	0
	May	2	1.0	22	1.8	9	2.2	5	1.8	4	1.0	11	2.0	31	2.1	9	2.0	0
	June	3	1.3	13	1.7	8	2.1	2	2.0	9	1.6	18	1.9	24	1.9	13	2.6	0
	July	2	1.5	14	1.6	8	1.9	2	1.0	6	1.1	23	1.9	22	2.1	15	2.3	1
	August	4	2.2	17	2.0	14	2.4	4	2.5	0	0	23	2.1	19	2.0	12	2.9	0
	September	7	1.6	10	2.0	15	2.2	5	2.2	0	0	12	1.7	24	1.7	17	1.8	0
	October	7	1.7	11	1.8	19	2.2	4	1.5	3	1.0	23	1.7	9	1.3	17	2.7	0
	November	2	1.0	15	2.0	8	2.2	4	1.5	1	2.0	31	1.7	21	1.3	8	1.9	0
	December	7	2.0	9	2.1	4	2.0	1	1.0	7	1.4	31	1.7	19	1.6	15	2.2	0
	The year	54	1.8	152	1.9	196	2.0	50	1.8	35	1.4	197	1.8	255	1.3	154	2.2	2
1871.	January	4	2.0	15	1.9	14	1.9	4	1.2	10	1.1	18	1.5	11	1.6	17	2.1	0
	February	3	1.3	9	2.0	5	1.4	5	1.4	4	1.5	28	1.5	16	1.8	14	2.6	0
	March	7	1.7	19	2.0	25	1.9	1	2.0	3	1.0	18	1.8	9	1.9	11	2.5	0
	April	9	1.9	23	1.8	18	2.0	2	1.5	2	2.0	14	1.7	9	2.2	13	2.3	0
	May	2	2.0	14	1.8	19	1.8	7	1.7	5	1.6	10	1.6	20	1.9	16	2.1	0
	June	1	1.0	13	2.5	16	2.1	3	1.0	5	1.6	18	2.0	17	2.6	17	3.1	0
	July	0	0	10	1.6	25	1.8	2	2.0	8	1.2	21	1.6	18	1.9	9	2.3	0
	August	0	0	12	2.2	32	2.8	1	1.0	0	0	26	1.5	11	2.1	11	1.5	0
	September	1	2.0	15	1.9	26	2.3	2	2.5	3	1.3	15	1.9	16	1.7	12	2.7	0
	October	0	0	27	2.8	18	2.7	0	0	0	0	18	2.4	5	1.4	25	2.5	0
	November	1	4.0	20	2.4	18	2.7	1	3.0	0	0	29	2.5	6	2.3	15	3.1	0
	December	1	3.0	13	2.3	6	1.8	1	3.0	0	0	25	1.9	16	1.8	31	2.1	0
	The year	29	1.9	190	2.1	222	2.2	29	1.6	40	1.3	240	1.8	154	1.9	161	2.4	0
396(*a*). Bakou, 1870.	January	24	3.2	3	4.7	3	4.0	9	3.7	21	4.7	18	5.1	...	...	3	1.3	12
	February	27	4.2	5	1.8	1	2.0	...	...	10	4.7	23	6.3	...	...	10	4.0	8
	March	30	3.6	4	2.0	...	...	9	3.3	22	4.9	14	5.9	...	...	7	5.6	7
	April	32	5.4	...	...	...	...	10	3.2	13	4.9	7	5.4	...	...	18	3.6	10
	May	29	5.3	1	2.0	...	...	5	2.8	15	4.9	16	5.4	...	...	7	5.4	20
	June	18	5.9	5	2.4	...	...	18	3.2	4	6.5	2	3.0	...	...	26	5.3	17
	July	22	6.0	3	2.7	...	...	15	3.2	4	4.0	1	4.0	...	...	27	6.1	21
	August	24	5.7	2	2.0	1	2.0	8	4.7	10	4.4	...	...	...	...	30	5.3	18
	September	32	2.1	...	...	2	2.5	7	1.3	6	1.2	...	...	...	...	...	...	43
	October	43	2.7	1	6.0	3	2.0	8	2.5	1	2.0	15	2.3	...	...	...	...	22
	November	18	2.4	...	...	2	2.0	9	2.9	10	1.6	12	2.3	...	...	...	...	39
	December	30	2.8	...	...	3	1.3	1	1.0	10	1.5	26	3.8	...	...	...	...	23
	The year	329	4.0	24	2.6	15	2.3	99	3.1	126	4.1	134	4.6	...	...	128	5.0	240
1871.	January	45	2.8	...	...	1	2.0	3	1.3	5	1.2	20	2.3	...	...	...	...	19
	February	25	3.4	4	1.2	...	...	...	...	7	1.1	20	2.8	...	...	...	...	28
	March	28	2.9	1	1.0	...	...	3	1.7	4	1.0	18	2.1	...	...	...	...	39
	April	34	2.6	...	...	...	...	1	1.0	9	1.3	6	2.8	...	...	...	...	40
	May	49	3.5	1	1.0	...	...	9	1.9	7	1.1	13	3.0	...	...	...	...	14
	June	62	4.5	...	...	...	...	5	1.6	3	1.0	5	2.0	...	...	...	...	15
	July	37	5.2	1	1.0	...	...	18	1.1	5	1.8	2	2.0	...	...	...	...	30
	August	39	4.0	4	1.0	...	...	6	2.2	9	2.1	1	1.0	...	...	23	4.3	11
	September	21	4.2	4	2.0	3	1.7	8	5.1	15	4.1	1	2.0	...	..	22	5.1	16
	October	27	3.4	9	1.7	2	4.0	11	3.6	10	4.7	...	...	...	...	23	4.4	12
	November	17	3.4	1	1.0	3	1.0	17	2.5	24	3.8	7	4.6	...	...	15	2.9	6
	December	25	3.8	5	1.2	1	1.0	7	1.1	14	3.6	3	3.3	...	...	17	3.8	21
	The year	409	3.7	30	1.4	10	1.9	87	2.3	112	2.8	96	2.7	...	...	100	4.2	251
398(*b*). Taschkent, 1871.	January	5	2.0	10	2.2	2	2.0	2	2.0	4	2.0	5	2.0	2	3.0	10	2.2	50
	February	7	2.0	8	2.2	0	0	1	2.0	2	2.0	0	0	0	0	5	2.0	26
	June	2	3.0	2	4.0	2	2.0	6	3.0	1	2.0	5	3.2	5	2.4	10	2.6	25
	July	6	2.7	2	3.0	1	2.0	2	3.0	1	2.0	3	2.7	2	2.0	7	2.9	12
	August	3	1.3	2	1.0	1	1.0	4	1.2	1	1.0	2	1.0	2	1.0	2	1.0	25
	September	3	2.0	5	1.0	2	1.0	5	1.0	2	1.0	1	1.0	3	1.0	8	1.1	56
	October	3	2.0	2	1.5	3	1.0	2	1.5	0	0	2	1.5	2	1.0	0	0	79
	November	1	2.0	4	1.2	2	1.0	1	2.0	0	0	1	1.0	5	1.2	2	1.0	74
	December	1	2.0	8	1.4	3	1.3	4	1.2	0	0	3	1.3	2	1.5	5	1.4	65

Addendum to Zone No. 10.—*Continued.*

	Time of the year.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Calms.
397(*a*). Krasnovodsk.	January	9	60	16	1	0	3	6	28	66
	February	12	52	13	4	0	5	5	19	45
	March	21	17	0	0	1	4	0	24	26
	April	18	12	1	0	0	2	0	30	26
	May	9	4	3	2	3	3	0	35	34
	June	15	13	2	4	3	6	2	34	11
	July	23	11	18	2	7	10	3	10	9
	August	4	4	10	4	0	1	2	3	3
	December	11	57	23	3	1	0	2	19	58
	Spring	48	33	4	2	4	9	0	89	86
	Summer	42	28	30	10	10	17	7	47	23
	Winter	32	169	52	8	1	8	13	66	119

		Relative Prevalence of Winds from the Different Points of the Compass.								Resultant.	
		North.	N.E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S.W. or betw'n S. & W.	West	N.W. or betw'n N. & W.	Direction.	Ratio.
400(*a*). Possiet Bay,[1] 1860 & 1861. Percentage.	December	2.07	2.07	2.76	3.45	1.38	6.90	6.90	74.48		
	January	0.68	11.49	0.68	10.81	0.00	4.73	0.68	70.95		
	February	1.43	4.29	1.43	8.57	1.43	5.00	4.29	73.57		
	March	1.30	10.39	3.25	14.29	3.90	26.62	9.74	30.52		
	April	2.70	20.27	5.41	35.81	18.92	4.05	3.38	9.46		
	May	0.65	15.58	7.79	44.16	6.49	8.44	3.25	13.64		
	June	0.00	19.18	13.01	33.56	1.37	21.23	1.37	10.27		
	July	0.65	18.83	7.79	44.81	5.19	13.64	1.30	7.79		
	August	0.68	5.41	3.38	51.35	8.11	21.62	2.01	7.43		
	September	0.00	22.00	4.00	20.00	8.00	20.00	2.00	24.00	S. 8° 56′ E.	.04
	Winter	1.39	5.95	1.62	7.61	0.94	5.54	3.96	73.00	N. 45 48 W.	.67½
	Spring	1.55	15.41	5.48	31.42	9.77	13.04	5.46	17.87	S. 34 58 E.	.20
	Summer	0.44	14.47	8.06	43.27	4.89	18.83	1.56	8.50	S. 41 6 E.	.42½
400(*b*). Olga Bay, 1858–59.	December	8.55	0.00	0.43	0.43	0.43	11.11	55.13	23.93		
	January	13.04	0.43	0.00	0.00	0.87	6.52	54.35	24.78		
	February	6.63	0.00	5.61	1.53	7.65	10.71	48.92	18.88		
	March	13.64	2.53	3.54	0.51	17.17	6.06	36.86	19.70	N. 71 52 W.	.33
	April	8.52	20.45	9.66	6.25	8.52	6.82	28.98	10.86		
	Winter	9.41	0.14	2.01	0.65	2.98	9.45	52.82	22.53	N. 78 26 W.	.74½
										Ratio of N. to S.	Ratio of E. to W.
402(*a*). Hakodade,[2] 1859–63.	January	7.77	0.00	5.96	3.63	1.30	1.04	30.83	49.48	1 : 0.10	1 : 8.48
	February	8.29	1.10	6.08	4.97	1.93	5.24	34.26	38.12	1 : 0.26	1 : 6.39
	March	7.14	1.98	11.08	15.02	7.14	7.64	24.88	25.12	1 : 0.87	1 : 2.05
	April	3.29	1.10	11.40	21.05	10.31	13.81	20.18	18.86	1 : 1.94	1 : 1.58
	May	3.77	0.00	12.03	26.18	16.51	16.04	19.34	6.13	1 : 5.93	1 : 1.09
	June	2.67	1.33	15.67	34.00	13.67	12.33	15.33	5.00	1 : 6.67	1 : 0.64
	July	1.26	0.32	16.35	36.16	11.01	18.55	13.52	2.83	1 : 14.90	1 : 0.66
	August	5.42	0.60	10.84	34.64	8.13	15.36	16.87	8.13	1 : 4.11	1 : 0.88
	September	7.52	1.31	11.11	27.12	2.94	5.23	21.24	23.52	1 : 1.09	1 : 1.26
	October	8.72	0.58	9.01	11.92	7.85	6.69	25.29	29.94	1 : 0.67	1 : 2.88
	November	7.98	0.61	6.75	10.74	3.37	7.67	28.53	34.36	1 : 0.51	1 : 3.90
	December	6.94	1.16	4.05	5.78	5.20	4.62	35.55	36.71	1 : 0.35	1 : 7.00
	Spring	4.73	1.03	11.50	20.75	11.32	12.50	21.47	16.70	1 : 1.98	1 : 1.52
	Summer	3.12	0.75	14.29	34.93	10.94	15.41	15.24	5.32	1 : 6.67	1 : 0.72
	Autumn	8.07	0.83	8.96	16.59	4.72	6.53	25.02	29.27	1 : 0.73	1 : 2.36
	Winter	7.67	0.75	5.36	4.79	2.81	3.63	33.55	41.44	1 : 0.23	1 : 7.21
	The year	5.90	0.84	10.03	19.27	7.45	9.52	23.82	23.18	1 : 1.21	1 : 1.88

[1] Possiet Bay. Annual resultant, computed from the resultants for the seasons, S. 58° 44′ W. .02½. Monsoon influences: Spring, S. 42° E. .20; Summer, S. 44° W. .42; Autumn, S. 46½° W. .04; Winter, N. 44° W. .67.

[2] Hakodade. Direction of resultant: Spring, S. 40° 53′ W. .23; Summer, S. 13° 49′ E. .40; Autumn, N. 74° 6′ W. .30; Winter, N. 62° 54′ W. .63; The year, S. 77° 46′ W. .23. Monsoon influences: Spring, S. 32° E. .15; Summer, S. 43° E. .47; Autumn, N. 25° W. .15; Winter, N. 45° W. .47.

Addendum to Zone No. 10.—*Continued.*

Observations on the Atlantic Ocean, calculated by the Meteorological Institute of the Netherlands, under Capt. Cornelissen's direction.

Between 15° and 30° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.	East of 15° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.
330(*a*).	Spring	17	21	28	30	3	331(*a*).	Spring	23	19	30	25	3
Lat. 44°–45° N.	Summer	23	13	32	27	4	Lat. 44°–45°.	Summer	32	11	27	29	4
(No. of observa-	Autumn	18	24	30	25	3	(No. of obser-	Autumn	23	20	25	28	3
tions 5201.)	Winter	14	18	37	27	2	vations 5201.)	Winter	19	17	32	28	3
330(*b*).	Spring	17	19	34	25	5	331(*b*).	Spring	28	17	26	24	5
Lat. 43°–44° N.	Summer	18	11	32	32	3	Lat. 43°–44°.	Summer	35	9	24	28	4
(No. of observa-	Autumn	23	24	24	25	13	(No. of obser-	Autumn	28	19	29	20	3
tions 4965.)	Winter	12	20	39	27	2	vations 4270.)	Winter	22	17	30	24	6
330(*c*).	Spring	20	21	30	22	6	331(*c*).	Spring	27	14	30	25	4
Lat. 42°–43° N.	Summer	17	18	29	31	5	Lat. 42°–43°.	Summer	40	6	18	32	4
(No. of observa-	Autumn	23	21	24	29	3	(No. of obser-	Autumn	32	17	25	22	4
tions 4526.)	Winter	14	20	34	29	2	vations 3608.)	Winter	23	16	31	24	6
330(*d*).	Spring	19	20	33	23	5	331(*d*).	Spring	30	13	29	25	4
Lat. 41°–42° N.	Summer	20	16	31	29	5	Lat. 41°–42°.	Summer	46	2	17	30	5
(No. of observa-	Autumn	26	23	26	20	5	(No. of obser-	Autumn	31	15	24	26	4
tions 4140.)	Winter	13	18	41	26	3	vations 3453.)	Winter	27	17	28	24	5
330(*e*).	Spring	19	19	33	24	5	331(*e*).	Spring	35	10	26	25	4
Lat. 40°–41° N.	Summer	26	12	24	34	4	Lat. 40°–41°.	Summer	45	2	16	31	5
(No. of observa-	Autumn	25	23	23	27	3	(No. of obser-	Autumn	33	11	18	29	6
tions 3532.)	Winter	15	20	35	27	3	vations 3245.)	Winter	30	16	22	28	7

ZONE No. 11.

LATITUDE 35° TO 40° NORTH.

The data for the study of the winds of this zone consist of observations made at over 444 stations on land, for an aggregate period of over 1941 years; and on the Atlantic and Pacific Oceans for over 39 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	7084 days = 19 years 3 months.
United States west of the Mississippi,	165	over 561 years 6 months.
United States east of the Mississippi,	222	1215 years 6 months.
Atlantic Ocean,	....	over 20 years.
Azore Islands,	7	23 years 6 months.
Portugal and Spain,	15	48 years, also other observations not regularly recorded.
Greece and Islands of the Mediterranean,	4	over 13 years 6 months.
Northern Africa,	7	46 years.
Asia,	24	over 34 years 4 months.

(Nos. 1 to 9.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of ten years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
1. Long.	Spring	15	37	17	50	15	15	7	42	12	67	16	45	6	49	21	37	21	S. 84° 3′ W.	.08	S. 77° W.	.16	157
160° to	Summer	2	7	1	19	5	16	9	12	26	16	3	15	5	8	2	10	4	S. 15 53 E.	.27	S. 0½ W.	.28½	53
165° W.	Autumn	13	45	15	14	8	5	9	50	9	60	35	67	9	60	28	32	6	S. 78 16 W.	.28	S. 76 W.	.36	152

(Nos. 2 to 9.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
2. Long. 155° to 160° W.	Spring	28	48	39	78	17	74	26	60	15	119	25	95	28	93	46	81	20	S. 84° 16′ W.	.09	S. 78° W.	.17	297
	Summer	0	0	9	6	14	7	2	12	6	23	15	22	7	9	6	1	4	S. 25 39 W.	.34	S. 33½ W.	.40	48
	Autumn	5	25	16	8	24	21	30	50	48	68	29	46	4	19	16	22	22	S. 0 1 E.	.27	S. 14½ W.	.30½	144
3. Long. 150° to 155° W.	Spring	36	42	13	13	3	35	14	57	10	24	4	42	9	47	42	48	10	N. 41 3 W.	.12	N. 67 W.	.17	150
	Summer	3	18	11	13	11	15	5	28	7	36	17	27	8	30	0	6	10	S. 25 24 W.	.20	S. 38 W.	.26½	82
	Autumn	15	3	13	24	9	21	11	60	44	36	8	21	9	20	3	14	1	S. 15 14 E.	.34	S. 2 E.	.35½	104
4. Long. 145° to 150° W.	Spring	0	11	23	14	4	7	11	28	10	10	5	3	1	15	14	6	1	N. 57 27 E.	.12	N. 35 E.	.04½	54
	Summer	22	85	13	46	25	53	16	17	22	63	45	38	32	49	10	25	22	N. 75 06 W.	.02	S. 60 W.	.06½	194
	Autumn	6	38	0	13	8	18	8	33	18	60	26	49	6	31	12	31	1	S. 50 56 W.	.26	S. 55½ W.	.33½	119
5. Long. 130° to 165° W.	Winter	2	16	12	12	12	7	21	17	5	5	0	5	2	11	0	15	0	N. 85 37 E.	.29	S. 72 W.	.37	47
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 33 E.	.08	....	...	2476
6. Long. 140° to 145° W.	Spring	0	2	6	13	0	12	3	7	0	0	0	11	7	8	2	0	0	S. 75 15 E.	.10	S. 21½ E.	.01½	24
	Summer	9	63	67	77	9	7	0	5	10	26	3	41	6	11	4	14	5	N. 38 57 E.	.36	N. 30½ E.	.08	119
	Autumn	5	61	10	48	15	28	19	15	7	50	27	48	9	23	6	28	11	S. 67 14 E.	.02	S. 58 W.	.02	137
7. Long. 130° to 140° W.	Spring	3	35	18	69	30	16	3	14	11	5	2	0	0	3	4	7	10	N. 70 19 E.	.46	N. 70 E.	.10½	100
	Summer	37	212	163	136	19	14	2	19	7	29	23	45	19	38	27	68	26	N. 25 39 E.	.41	N. 12 E.	.10	295
	Autumn	20	78	28	47	28	30	16	44	18	58	14	62	38	30	20	43	15	N. 22 45 W.	.04	N. 83 W.	.02½	196
8. Long. 125° to 130° W.	Spring	16	30	13	1	2	6	6	12	10	6	13	20	18	14	9	24	3	N. 45 59 W.	.26	S. 51½ W.	.05	68
	Summer	112	103	21	4	0	3	0	8	6	10	5	29	18	53	10	86	12	N. 14 50 W.	.63	N. 18 W.	.09	160
	Autumn	62	74	24	35	7	10	11	13	7	19	8	23	11	23	23	75	10	N. 1 25 W.	.44	N. 16 E.	.04	145
	Winter	6	11	2	1	2	12	18	19	5	3	1	9	1	3	5	17	4	S. 61 40 E.	.15	S. 28 E.	.11	40
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 11 11 W.	.29	....	...	413
9. Long. 120° to 125° W.	Spring	32	17	0	0	0	0	5	14	2	8	12	6	9	11	15	92	5	N. 31 1 W.	.57	N. 36 W.	.02½	76
	Summer	45	52	2	1	0	1	3	25	3	9	1	16	10	38	34	173	19	N. 25 35 W.	.64	N. 17 W.	.04	144
	Autumn	118	93	7	26	5	7	7	47	28	29	8	46	19	100	79	342	102	N. 27 36 W.	.53	S. 18 W.	.02	356
	Winter	19	10	3	8	2	7	16	31	20	20	4	15	4	6	9	45	17	S. 64 14 W.	.06	S. 21½ E.	.08	79
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 29 53 W.	.43	....	...	655

Columns North. to Calm or var.: Relative Prevalence of Winds from the Different Points of the Compass.

[1] Computed from the resultants for the seasons.

(Nos. 10 to 15.) **California,** latitude 39° to 40°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	Aggregate length of time. mos.	Date.
Camp Far West,	Post Surgeon,	2	1	1849 to 1852 inclusive.
Camp Wright,	Post Surgeon,	5	0	1864 to 1869 inclusive.
Chico,	W. F. Cheney,	0	3	1869.
Fort Bragg,	Post Surgeon,	3	3	1861 to 1864 inclusive.
Marysville,	W. C. Belcher,	3	1	1857 to 1863 inclusive, except 1860.
Truckee,	Miss Annie J. Allen,	1	0	1870.
Union Ranche,	W. L. Dunkum,	3	8	1858 to 1863 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
10. Fort Bragg.	January	39	41	71	58	18	19	19	109	...	....	..	....	...	124
	February	40	37	28	61	8	21	14	130	...	....	...	....	...	113
	March	25	24	58	48	22	28	25	136	...	....	...	....	...	124
	April	48	19	39	46	10	45	26	125	...	....	...	....	...	120
	May	21	30	38	37	11	42	16	177	...	....	...	....	...	124
	June	19	10	16	15	12	33	16	153	...	....	...	....	...	90
	July	3	9	3	15	21	45	24	60	...	....	...	....	...	62
	August	24	29	13	35	22	67	17	165	...	....	...	....	...	124
	September	8	23	9	17	10	64	35	104	...	....	...	....	...	90
	October	20	15	27	21	19	42	14	121	...	....	...	....	...	93
	November	8	15	27	18	6	13	7	86	...	....	...	....	...	60
	December	24	26	42	83	23	11	12	58	...	....	...	....	...	93
	Spring	94	73	135	131	43	115	67	438	...	N. 36° 52′ W.	.27	....	...	368
	Summer	46	48	32	65	55	145	57	378	...	N. 65 32 W.	.42	....	...	276
	Autumn	36	53	63	56	35	119	56	311	...	N. 58 32 W.	.35½	....	...	243
	Winter	103	104	141	202	49	49	45	297	...	N. 22 56 E.	.17½	....	...	330
	The year[1]	...	...	...	...	...	...	...	...	...	N. 46 34 W.	.27	....	...	1217

Columns North. to Calm or variable.: Relative Prevalence of Winds from the Different Points of the Compass.

[1] Computed from the resultants for the seasons.

(Nos. 11 to 15.) **California.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
11. Camp Wright.	January	60	23	25	65	37	28	72	60	...	....	...	....	...	124
	February	57	7	21	91	40	44	85	78	...	....	...	....	...	141
	March	40	26	9	104	25	90	28	143	...	....	...	....	...	155
	April	74	15	34	77	62	29	52	107	...	....	...	....	...	150
	May	58	20	23	53	40	20	41	117	...	....	...	....	...	124
	June	47	30	18	73	41	30	76	75	...	....	...	....	...	120
	July	48	51	27	97	46	61	21	114	...	....	...	....	...	155
	August	53	66	18	75	43	76	21	82	...	....	...	....	...	155
	September	63	65	38	72	70	48	66	119	...	....	...	....	...	180
	October	62	37	42	46	66	82	67	156	...	....	...	....	...	186
	November	74	29	19	63	67	92	66	127	...	....	...	....	...	180
	December	48	20	21	71	82	80	64	79	...	....	...	....	...	155
	Spring	172	61	66	234	127	139	121	367	...	N. 67° 40′ W.	.17	....	...	429
	Summer	148	147	63	245	130	167	118	271	...	N. 75 45 W.	.07	....	...	430
	Autumn	199	131	99	181	203	222	199	402	...	N. 74 40 W.	.20½	....	...	546
	Winter	165	50	67	227	159	152	221	217	...	S. 71 31 W.	.18½	....	...	420
	The year[3]	...	...	...	...	...	...	...	...	...	N. 82 33 W.	.15	....	...	1825
12. Longitude 122° to 124° W.[1]	Spring	266	134	201	365	170	254	188	805	...	N. 49 56 W.	.21	N. 5° E.	.05	
	Summer	194	195	95	310	185	312	175	649	...	N. 67 35 W.	.20½	S. 73½ W.	.03	
	Autumn	235	184	162	237	238	341	255	713	...	N. 67 37 W.	.25	N. 81½ W.	.07	
	Winter	268	154	208	429	208	201	266	514	...	N. 60 9 W.	.08	S. 63 E.	.11	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 61 47 W.	.17½			
13. Camp Far West.	Spring	107	25	7	157	254	39	52	68	...	S. 2 5 E.	.31	....	...	215
	Summer	2	1	0	51	69	61	12	15	...	S. 12 8 W.	.65½	....	...	92
	Autumn	55	17	10	51	228	34	24	42	...	S. 5 52 W.	.41½	....	...	182
	Winter	124	34	16	81	271	25	38	69	...	S. 2 45 W.	.23	....	...	242
	The year[3]	...	...	...	...	...	...	...	...	...	S. 6 27 W.	.40			
14. Truckee.	Spring	1	7	10	27	17	119	69	22	4	S. 53 30 W.	.60½	....	...	92
	Summer	1	14	12	36	6	81	52	61	13	S. 71 43 W.	.40	....	...	92
	Autumn	0	23	7	69	2	131	22	11	8	S. 25 8 W.	.48½	....	...	91
	Winter	2	8	7	24	6	102	55	4	16	S. 49 51 W.	.59	....	...	75
	The year[3]	...	...	...	...	...	...	...	...	...	S. 49 29 W.	.50	....	...	350
15. Longitude 120 to 122° W.[2] Surface winds.	Spring	409	92	70	428	1077	543	223	413	74	S. 24 49 W.	.33			
	Summer	104	55	45	268	1058	564	206	327	72	S. 23 51 W.	.51½			
	Autumn	333	95	51	299	790	386	153	342	117	S. 28 8 W.	.28			
	Winter	531	170	73	398	907	445	214	373	120	S. 28 23 W.	.21			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 25 45 W.	.33			
Motion of clouds.	Spring	10	8	4	43	191	147	109	109	...	S. 47 3 W.	.55	S. 10° E.	.05	
	Summer	21	12	1	99	77	132	91	138	...	S. 60 46 W.	.40½	N. 22 E.	.15	
	Autumn	24	3	8	26	156	170	92	60	...	S. 45 7 W.	.59½	S. 8 W.	.09	
	Winter	37	12	8	56	216	258	187	132	...	S. 53 40 W.	.56	N. 87 W.	.04	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 50 54 W.	.52½			
The two combined.	Spring	419	100	74	471	1268	690	332	522	74	S. 30 2 W.	.36	S. 69 E.	.02	
	Summer	125	67	46	367	1135	696	297	465	72	S. 28 54 W.	48½	S. 19½ W.	.13	
	Autumn	357	98	59	325	946	556	245	402	117	S. 33 19 W.	.33	N. 19 E.	.04	
	Winter	568	182	81	454	1123	703	401	505	120	S. 39 14 W.	.28	N. 11 E.	.09	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 32 10 W.	.36			

[1] Fort Bragg and Camp Wright. [2] Camp Far West, Chico, Maryville, Truckee and Union Ranche.
[3] Computed from the resultants for the seasons.

(Nos. 16 to 21.) **California,** latitude 38° to 39°

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Auburn,	Robert Gordon,	1	11	1859 and 1860.
Benicia,	Post Surgeon,	14	10	1849 to 1865 inclusive.
Folsom,	Rev. S. V. Blakeslee,	0	8	1861.
Mare Island,	U. S. Naval Hospital,	0	6	1868 and 1869.
Moquelumne Hill,	Wesley K. Boucher,	1	9	1859, 1860 and 1861.
Murphysville,	Ephraim Cutting,	0	11	1868 and 1869.
Sacramento,	T. M. Logan and others,[1]	11	10	1849 and 1853 to 1867 inclusive, except 1860.
Sonoma,	Post Surgeon,	0	6	November, 1850, to April, 1851, inclusive.
Stoney Point,	Dr. Thornton,	0	2	1869.
Vacaville,	J. C. Simmons,	0	8	1869.

[1] Dr. F. W. Hatch and Charles Craft.

(Nos. 16 to 21.) **California.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
		Relative Prevalence of Winds from the Different Points of the Compass.												
16. Benicia.	Spring	39	35	237	120	194	861	2454	109	...	S. 20° 30′ W.	.73½		
	Summer	0	5	4	15	96	757	3500	152	...	S. 82 40 W.	.91		
	Autumn	103	184	435	174	178	843	2471	202	...	S. 78 20 W.	.56		
	Winter	274	468	1223	255	288	546	1029	196	...	S. 58 27 E.	.05		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 78 11 W.	.54		
17. Longitude 122° to 123° W.[1]	Spring	51	43	244	165	202	917	2547	177	31	S. 75 27 W.	.69	S. 69° W.	.16
	Summer	0	5	4	18	117	772	3500	152	27	S. 82 13 W.	.90	S. 89 W.	.37
	Autumn	115	186	440	205	224	968	2508	223	13	S. 76 11 W.	.55½	S. 58 W.	.03
	Winter	288	489	1300	314	318	628	1077	251	50	S. 44 24 E.	.05	N. 82 E.	.56
	The year[5]	...	...	...	...	...	...	...	...	...	S. 77 18 W.	.53		
18. Sacramento, 1853 to 1859. Surface winds.	Spring	181	59	44	236	272	231	76	221	0	S. 32 39 W.	.20		
	Summer	68	19	16	283	510	286	84	110	0	S. 10 7 W.	.18		
	Autumn	269	55	67	224	280	160	77	235	0	S. 49 55 W.	.09		
	Winter	313	125	69	388	138	91	33	377	0	N. 19 32 E.	.13		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 19 26 W.	.17		
Motion of clouds.	Spring	26	26	19	134	91	271	151	77	...	S. 42 28 W.	.47½		
	Summer	9	11	12	70	62	80	133	5	...	S. 39 58 W.	.50½		
	Autumn	15	14	10	96	47	296	105	78	...	S. 49 6 W.	.56½		
	Winter	52	15	6	172	84	221	140	155	...	S. 54 40 W.	.39		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 46 27 W.	.48½		
The two combined.	Spring	207	85	63	370	363	502	227	298	...	S. 39 7 W.	.30½		
	Summer	77	30	28	353	572	366	217	115	...	S. 16 0 W.	.53½		
	Autumn	284	69	77	320	327	456	182	313	...	S. 49 18 W.	.24½		
	Winter	365	140	75	560	222	312	173	532	...	N. 89 33 W.	.08½		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 33 50 W.	.27		
19. Longitude 121° to 122° W.[2] Surface winds.	Spring	401	116	212	616	665	701	225	579	14	S. 29 39 W.	.23		
	Summer	143	34	38	848	1160	1137	245	317	3	S. 15 43 W.	.57½		
	Autumn	545	120	155	629	564	627	154	747	5	S. 54 3 W.	.14		
	Winter	600	185	225	875	298	221	76	825	36	N. 33 23 E.	.08½		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 23 42 W.	.21		
Motion of clouds.	Spring	45	33	25	162	139	375	164	99	...	S. 41 29 W.	.49	S. 38 E.	.02½
	Summer	17	24	19	78	104	152	141	6	...	S. 35 17 W.	.52	S. 27 E.	.08½
	Autumn	24	22	11	114	126	422	117	100	...	S. 43 50 W.	.58½	S. 38 W.	.10
	Winter	104	19	21	209	117	316	205	224	...	S. 62 18 W.	.37½	N. 1 E.	.17
	The year[5]	...	...	...	...	...	...	...	...	...	S. 44 41 W.	.49		
The two combined.	Spring	446	149	237	778	804	1076	389	678	14	S. 34 12 W.	.29	S. 73 W.	02
	Summer	160	58	57	926	1264	1289	386	323	3	S. 17 51 W.	.56½	S. 5 W.	.31
	Autumn	569	142	166	743	690	1049	271	847	5	S. 49 58 W.	.24	N. 26½ W.	.09
	Winter	704	204	246	1084	415	573	281	1049	36	N. 89 18 W.	.06	N. 20 E.	.25
	The year	1879	550	706	3531	3173	3987	1327	2897	58	S. 31 57 W.	.27		
20. Longitude 120° to 121° W.[3]	Spring	14	50	110	166	25	105	140	86	6	S. 6 36 W.	.15½	S. 16½ E.	.02½
	Summer	35	79	59	36	22	182	137	115	41	S. 88 54 W.	.29½	N. 65 W.	.29½
	Autumn	25	116	129	126	36	182	62	89	18	S. 29 1 E.	.12	N. 74 E.	.09
	Winter	21	73	126	235	55	147	74	64	18	S. 30 12 E.	.29½	S. 54½ E.	.21½
	The year[5]	...	...	...	...	...	...	...	...	...	S. 11 19 W.	.13		
21. San Francisco, Sacramento, Stockton and Marysville, 1854 to 1857 inclusive.[4] No. of observations.	Spring	83	15	20	102	128	122	142	92	...	S. 56 10 W.	.278	S. 47 W.	.10
	Summer	42	7	7	129	192	111	182	51	...	S. 34 45 W.	.410	S. 18 W.	.27
	Autumn	133	34	28	106	95	66	99	121	...	N. 76 0 W.	.131	N. 13 E.	.12
	Winter	176	43	29	133	92	30	45	164	...	N. 13 59 W.	.130	N. 30 E.	.24
	The year[5]	...	...	...	...	...	...	...	...	...	S. 61 49 W.	.174		
No. of miles.	Spring	289	38	50	437	737	594	543	408	...	S. 45 8 W.	.336	S. 25 W.	.14
	Summer	172	34	20	711	1074	632	1041	224	...	S. 45 11 W.	.435	S. 34 W	.24
	Autumn	694	132	80	611	686	283	375	817	...	N. 85 6 W.	.125	N. 24 E.	.14
	Winter	703	187	76	848	418	132	185	953	...	N. 19 56 W.	.095	N. 36 E.	.25
	The year[5]	...	...	...	...	...	...	...	...	...	S. 58 1 W.	.210		
M'n vel. in miles p. hour.	Spring	3.48	2.53	2.50	4.28	5.76	4.87	3.82	4.43					
	Summer	4.10	4.86	2.86	5.51	5.59	5.78	5.72	4.39					
	Autumn	5.22	3.88	2.86	5.76	7.22	4.29	3.79	6.75					
	Winter	3.99	4.35	2.62	6.38	4.54	4.40	4.11	5.81					

[1] Benicia, Mare Island, Sonoma and Stoney Point.
[2] Observed at Auburn, Folsom, Sacramento, Vacaville. [3] Observed at Moquelumne Hill and Murphysville.
[4] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.40	5.42	5.38	4.82	5.00
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing velocity	1.22	2.22	.70	.63	.87
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.48	2.36	.67	.46	1.05
Excess of the latter over the former	+.26	+.14	—.03	—.17	+.18

[5] Computed from the results for the seasons.

(Nos. 22 to 27.) **California,** latitude 37° to 38°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alcatraz Island,	Post Surgeon,	7	4	1860 to 1869 inclusive.
Angel Island,	Post Surgeon,	2	1	1867, 1868 and 1869.
Fort Point,	Post Surgeon,	3	6	1865 to 1869 inclusive.
Fort Miller,	Post Surgeon,	6	11	1851 to 1858 inclusive, 1863 and 1864.
Camp Stamford (Stockton),	Post Surgeon,	0	4	1862 and 1863.
Marsh's Ranche,	Francis M. Rogers,	1	11	1867 and 1868.
Martinez,	Edwin Howe,	0	2	1860.
Paradise,	J. W. A. Wright,	0	3	1869.
Point San Jose,	....	1	0	1865, 1866, 1867 and 1869.
Presidio (San Francisco),	Post Surgeon,	14	10	1850 and 1852 to 1869 inclusive.
San Francisco,	Dr. H. Gibbons,	6	6	1854 to 1859 inclusive.
Santa Clara,	L. A. Gould & O. S. Frombes,	0	10	1859 and 1860.
Stockton,	R. K. Ried & W. M. Trivett,	1	9	1854, 1856 and 1867.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
22. Alcatraz Island.[1]	January	81	100	32	82	85	154	96	114	...	....	...	....	...	248
	February	73	96	40	80	62	191	107	113	...	....	...	....	...	255
	March	45	38	40	73	54	259	220	108	...	....	...	....	...	279
	April	0	0	0	0	8	48	1	0	..	....	...	....	...	270
	May	0	0	0	0	8	54	0	0	...	....	...	....	...	186
	June	3	0	0	3	37	291	189	77	...	....	...	....	...	180
	July	9	0	0	1	17	308	183	114	...	....	...	....	...	186
	August	0	0	0	0	28	275	162	118	...	....	...	....	...	186
	September	0	4	4	3	52	341	140	113	...	....	...	....	...	210
	October	22	31	9	123	53	483	141	178	...	....	...	....	...	217
	November	53	91	23	79	58	238	75	124	...	....	...	....	...	240
	December	55	127	38	188	47	136	49	140	...	....	...	....	...	248
	Spring	45	38	40	73	70	361	221	108	...	S. 62° 14′ W.	.51½	S. 9½° W.	.04½	735
	Summer	12	0	0	4	82	874	534	309	...	S. 70 57 W.	.79½	S. 79 W.	.31	552
	Autumn	75	126	36	205	163	1062	356	415	...	S. 61 59 W.	.52½	S. 15 W.	.05	667
	Winter	209	323	110	350	194	481	252	367	...	S. 72 19 W.	.12	N. 64 E.	.37	751
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 25 W.	.49	....	...	2705
23. Angel Island.	January	20	32	57	6	26	7	15	14	...	....	...	....	...	62
	February	22	26	37	3	17	23	32	19	...	....	...	....	...	57
	March	4	7	86	5	6	35	29	14	...	....	...	....	...	62
	April	3	15	64	12	14	42	27	3	...	....	...	....	...	60
	May	3	5	62	8	31	53	14	10	...	....	...	....	...	62
	June	2	8	48	1	41	61	19	0	...	....	...	....	...	60
	July	0	7	53	6	39	68	13	0	...	....	...	....	...	62
	August	0	18	44	8	37	23	56	0	...	....	...	....	...	62
	September	1	6	44	25	17	40	47	0	...	....	...	....	...	60
	October	0	0	81	15	20	9	61	0	...	....	...	....	...	62
	November	0	0	96	3	16	14	51	0	...	....	...	....	...	60
	December	34	9	102	12	41	13	55	8	...	....	...	....	...	93
	Spring	10	27	212	25	51	130	70	27	...	S. 31 5 E.	.24	....	...	184
	Summer	2	33	145	15	117	152	88	0	...	S. 4 30 W.	.38	....	...	184
	Autumn	1	6	221	43	53	63	159	0	...	S. 23 1 E.	.24½	....	...	182
	Winter	76	67	196	21	84	43	102	41	...	N. 76 35 E.	.16	....	...	212
	The year[2]	...	...	...	...	...	...	...	...	...	S. 23 50 E.	.21	....	...	762
24. Presidio, San Francisco.	January	213	254	83	146	55	300	208	186						
	February	104	133	58	154	84	315	275	207						
	March	37	53	46	133	96	427	404	152						
	April	23	39	19	78	82	519	431	216						
	May	8	14	27	56	65	655	493	254						
	June	14	3	9	14	50	706	495	140						
	July	1	1	1	4	43	717	573	55						
	August	17	8	0	11	100	866	437	126						
	September	10	16	8	21	54	872	477	119						
	October	32	55	18	53	122	720	480	113						
	November	129	102	36	133	123	403	417	139						
	December	210	289	60	233	114	243	233	174						
	Spring	68	106	92	267	243	1601	1328	622	...	S. 68 53 W.	.63			
	Summer	32	12	10	12	193	2289	1505	321	...	S. 64 43 W.	.83½			
	Autumn	171	173	62	207	299	1995	1374	371	...	S. 64 25 W.	.65			
	Winter	527	676	201	533	253	858	716	567	...	N. 76 13 W.	.16½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 68 26 W.	.56			

[1] Motion of clouds included with the surface winds in the last nine months of the year 1869.
[2] Computed from the resultants for the seasons.

(Nos. 25 to 27.) **California.**—*Continued.*

Place and kind of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
25. San Francisco.[1]	January	2302	375	147	177	21	1471	264	1161						
	February	618	180	45	558	147	992	860	306						
	March	218	60	28	639	470	1934	2447	426						
	April	30	72	0	168	312	2992	4845	209						
	May	...	...	...	348	24	1578	4928	2530						
	June	...	...	...	...	18	8338	3428							
	July	...	...	...	...	9	8725	2020	362						
	August	...	...	...	...	...	2608	3908	2168						
	September	...	...	...	...	54	2588	4219	500						
	October	...	6	...	...	63	136	4396	96						
	November	630	252	...	231	232	508	2056	222						
	December	414	850	18	652	489	1290	1576	234						
	The year	4212	1795	238	2773	1839	33160	34947	8214						
26. Longitude 121° to 123° W.[2] Surface winds.	Spring	353	237	190	600	665	2365	3088	1436	830	S. 76° 13′ W.	.52½			
	Summer	100	44	58	78	425	2802	4065	1132	678	S. 77 9 W.	.73			
	Autumn	422	386	187	549	664	2540	2887	1267	1577	S. 75 7 W.	.47			
	Winter	1254	1039	541	1155	932	1601	1320	1332	1305	N. 87 49 W.	.12½			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 77 24 W.	.46			
Motion of clouds.	Spring	92	11	11	26	171	314	713	113	...	S. 76 40 W.	.69	N. 83° W.	.10	
	Summer	9	2	6	17	78	199	973	19	...	S. 73 43 W.	.56½	N. 56 E.	.04	
	Autumn	64	18	23	17	182	241	599	57	...	S. 72 1 W.	.67	S. 66 W.	.07	
	Winter	228	34	33	49	362	417	445	163	...	S. 67 1 W.	.48	S. 86 E.	.13	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 72 45 W.	.60			
2 preceding combined.	Spring	445	248	201	626	836	2679	3801	1549	830	S. 76 17 W.	.55	S. 72½ W.	.07	
	Summer	109	46	64	95	503	3001	5038	1151	678	S. 77 28 W.	.73	S. 79½ W.	.26	
	Autumn	486	404	210	566	846	2781	3486	1324	1577	S. 74 41 W.	.49	S. 26½ W.	.02	
	Winter	1482	1073	574	1204	1294	2018	1765	1495	1305	S. 78 6 W.	.11½	N. 75 E.	.36	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 76 29 W.	.47			
27. Longitude 120° to 121° W. (Fort Miller.)	January	37	71	182	96	41	88	75	60	...	....	...	....	...	217
	February	48	46	114	58	24	38	94	28	...	....	...	....	...	171
	March	56	42	125	77	63	86	153	31	...	....	...	....	...	217
	April	55	29	110	51	49	80	171	29	...	....	...	....	...	210
	May	60	42	100	67	57	84	156	37	...	....	...	....	...	217
	June	54	20	53	60	83	80	120	34	...	....	...	....	...	210
	July	30	3	19	19	132	106	100	33	...	....	...	....	...	155
	August	44	14	60	53	62	125	117	44	...	....	...	....	...	217
	September	41	25	93	74	69	90	183	49	...	....	...	....	...	210
	October	34	39	150	110	39	71	137	46	...	....	...	....	...	186
	November	21	37	211	132	45	55	81	59	...	....	...	....	...	210
	December	26	72	243	158	58	108	88	42	...	....	...	....	...	248
	Spring	171	113	335	195	169	250	480	97	...	S. 46 26 W.	.13	N. 50 E.	.08	644
	Summer	128	37	132	132	277	311	337	111	...	S. 47 3 W.	.36	S. 47 W.	.15½	582
	Autumn	96	101	454	316	153	216	401	154	...	S. 18 50 W.	.14	N. 86 E.	.10	606
	Winter	111	189	539	312	123	234	257	130	...	S. 65 32 W.	.22	N. 46 W.	.07	636
	The year[3]	...	...	...	...	...	...	...	...	...	S. 47 2 W.	.20½	....	...	2468

[1] Number of miles, from observations by the Coast Survey, in the year 1855.
[2] From observations at all the stations in the foregoing list, except Fort Miller.
[3] Computed from the resultants for the seasons.

(Nos. 28 to 30.) **California,** latitude 36° to 37°.

Observed at the following places, viz. :—

Camp Independence, by Post Surgeons, for an aggregate period of 15 months, in the years 1862, 1863 and 1869.

Monterey, by C. A. Canfield and Post Surgeons, for an aggregate period of 12¼ years, in the years 1847 to 1852, 1859, 1860, 1862 and 1864 to 1869, all inclusive.

Watsonville, by A. J. Compton, during ten months of the year 1869.

(Nos. 28 to 30.) **California.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
28. Monterey. Surface winds.	Spring	226	69	45	65	144	518	520	781	120	N. 78° 14′ W.	.53			
	Summer	213	142	54	79	159	729	1047	989	99	N. 82 10 W.	.59			
	Autumn	286	154	37	64	125	660	641	655	350	N. 80 54 W.	.47			
	Winter	382	132	28	80	175	589	392	443	326	N. 73 50 W.	.38½			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 79 12 W.	.49½			
28. Monterey. Motion of clouds.	Spring	53	7	8	19	44	333	356	315	...	S. 89 7 W.	.69½	N. 3° W.	.06	
	Summer	64	10	5	19	43	305	441	237	...	S. 87 36 W.	.71	N. 25 W.	.04	
	Autumn	53	10	9	10	52	364	383	227	...	S. 82 58 W.	.70½	S. 17 W.	.03	
	Winter	54	15	5	20	42	391	298	180	...	S. 78 10 W.	.68½	S. 17 E.	.08	
	The year[2]	...	...		...	...	...	...	...	...	S. 84 29 W.	.69½			
29. Longitude 121° to 122° W.[1]	Spring	281	76	53	84	197	851	951	1098	200	N. 83 20 W.	.57	N. 56 W.	.03½	
	Summer	277	152	59	98	206	1034	1577	1226	189	N. 83 52 W.	.61	N. 73 W.	.07	
	Autumn	347	164	46	74	184	1024	1054	885	392	N. 86 39 W.	.52½	S. 48 E.	.02	
	Winter	440	147	33	103	283	988	697	623	349	S. 87 32 W.	.44½	S. 74 E.	.10	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 86 9 W.	.54			
30. Camp Independence.	January	32	3	11	31	6	6	33	32	17	....	...	....	...	62
	February	21	3	3	15	7	1	6	12	16	....	...	....	...	28
	March	15	3	3	13	9	0	12	19	19	....	...	....	...	31
	April	28	3	8	6	1	2	10	24	8	....	...	....	...	30
	May	16	5	6	17	4	3	9	12	21	....	...	....	...	31
	June	26	3	6	19	0	5	2	15	14	....	...	....	...	30
	July	26	4	4	17	4	0	3	8	27	....	...	....	...	31
	August	18	0	2	28	4	3	1	4	33	....	...	....	...	31
	September	12	0	4	19	3	15	16	20	27	....	...	....	...	30
	October	35	4	7	11	4	9	11	15	40	....	...	....	...	31
	November	31	11	13	11	5	9	25	54	84	....	...	....	...	60
	December	58	8	5	23	10	10	45	50	24	....	...	....	...	62
	Spring	59	11	17	36	14	5	31	55	48	N. 20 18 W.	.24	N. 15 W.	.04½	92
	Summer	70	7	12	64	8	8	6	27	74	N. 41 51 E.	.17	S. 77 E.	.20	92
	Autumn	78	15	24	41	12	33	52	89	151	N. 40 34 W.	.23	S. 82 W.	.08	121
	Winter	111	14	19	69	23	17	84	94	57	N. 39 19 W.	.27½	N. 76 W.	.10	152
	The year[2]	...	...	...	...	...	...	...	...	...	N. 21 41 W.	.20	....	...	457

[1] Observed at Monterey and Watsonville; upper and lower currents combined.
[2] Computed from the resultants for the seasons.

(No. 31.) **Western Nevada.**

Observed at Fort Churchill, by U. S. Army Surgeons, for an aggregate period of over seven years, in the years 1860 to 1869 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
31. Fort Churchill.	January	53	110	61	47	43	107	131	53	...	....	...	....	...	217
	February	32	123	73	48	42	118	116	42	...	....	...	....	...	198
	March	25	110	69	51	41	113	191	54	...	....	...	....	...	217
	April	39	99	55	18	34	93	139	40	...	....	...	....	...	180
	May	24	66	58	20	29	92	262	61	...	....	...	....	...	217
	June	35	47	58	17	22	108	262	79	...	....	...	....	...	210
	July	37	61	52	63	35	87	177	36	...	....	...	....	...	186
	August	16	62	30	81	49	99	212	58	...	....	...	....	...	217
	September	21	126	60	53	30	88	166	30	...	....	...	....	...	210
	October	57	164	109	61	30	84	190	44	...	....	...	....	...	248
	November	82	107	88	30	51	107	187	60	...	....	...	....	...	240
	December	61	120	63	52	43	125	148	43	...	....	...	....	...	217
	Spring	88	275	182	89	104	298	592	155	...	N. 88° 15′ W.	.26½	N. 83° W.	.06½	614
	Summer	88	170	140	161	106	294	651	173	...	S. 80 54 W.	.34½	S. 68½ W.	.15	613
	Autumn	160	397	257	144	114	279	543	134	...	N. 57 57 W.	.11	N. 62 E.	.12	698
	Winter	146	353	197	147	128	350	395	138	...	S. 85 51 W.	.10½	S. 84 E.	.10	632
	The year[1]	...	...	...	...	...	...	...	...	...	N. 89 31 W.	.20	....	...	2557

[1] Computed from the resultants for the seasons.

(Nos. 32 to 36.) **Arizona,** north of latitude 35°.

Observed by U. S. Army Surgeons at the following military posts, viz. :—

Camp El Dorado, for an aggregate period of 19 months, in the years 1860, 1861 and 1867.

Camp Willow Grove, for an aggregate period of 20 months, in the years 1868 and 1869.

Fort Defiance, for an aggregate period of 8⅙ years, in the years 1852 to 1854, 1856 to 1859, and 1860 to 1861, all inclusive.

Fort Mojave, for an aggregate period of 5⅓ years, in the years 1859 to 1861, and 1865 to 1869, both inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
32. Camp El Dorado.	January	20	9	24	11	36	19	19	27						
	February	32	7	49	25	59	23	36	18						
	March	9	24	18	3	12	9	6	12						
	April	67	12	18	15	48	3	6	6						
	May	33	9	6	15	70	15	18	9						
	June	26	6	9	18	83	18	3	3						
	July	3	6	22	101	3	13	15	21						
	August	15	18	18	9	3	3	6	18						
	September	12	21	27	15	3	0	6	6						
	October	18	6	21	15	9	6	3	9						
	November	6	6	27	6	3	9	15	18						
	December	0	3	33	6	6	0	24	21	...					
	Spring	109	45	42	33	130	27	30	27	...	S. 66° 44′ E.	.07½			
	Summer	44	30	49	128	89	34	24	42	...	S. 37 22 E.	.31			
	Autumn	36	33	75	36	15	15	24	33	...	N. 64 22 E.	.27½			
	Winter	52	19	106	42	101	42	79	66	...	S. 7 21 W.	.09½			
	The year[3]	...	...	...	...	...	...	...	...		S. 62 52 E.	.14	....	...	577
33. Fort Mojave.	January	214	61	15	57	32	26	32	59						
	February	195	55	28	50	48	29	24	61						
	March	165	30	61	86	90	20	27	55						
	April	134	33	62	81	78	20	20	89						
	May	78	5	25	138	138	21	9	61						
	June	20	18	23	104	113	33	30	19						
	July	11	9	23	76	153	57	27	16						
	August	30	8	20	69	194	24	21	6						
	September	75	8	29	78	166	46	11	35						
	October	188	45	28	76	122	42	27	23						
	November	232	56	36	70	20	7	56	65						
	December	304	42	40	23	20	29	72	48						
	Spring	377	68	148	305	306	61	56	205	...	N. 88 12 E.	.11			
	Summer	61	35	66	249	460	114	78	41	...	S. 7 29 E.	.54½			
	Autumn	495	109	93	224	308	95	94	123	...	N. 32 37 E.	.09½			
	Winter	713	158	83	130	100	84	128	168	...	N. 1 37 W.	.44½			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 85 19 E.	.05½	....	...	1948
34. Camp Willow Grove.	January	9	41	2	2	7	17	2	13	0	....	...	....	...	31
	February	51	29	5	8	12	38	5	16	6	....	...	....	...	57
	March	51	10	2	1	34	54	11	11	10	....	...	....	...	62
	April	39	29	9	5	10	59	16	11	1	....	...	....	...	60
	May	38	19	2	6	36	53	14	9	7	....	...	....	...	62
	June	20	22	7	2	40	53	15	10	11	....	...	....	...	60
	July	27	37	3	2	42	32	19	15	6	....	...	....	...	62
	August	31	31	2	8	37	42	8	11	14	....	...	....	...	62
	September	21	29	2	5	26	56	4	13	24	....	...	....	...	60
	October	10	39	0	0	4	22	0	14	0	....	...	....	...	31
	November	16	35	1	3	5	10	4	16	0	....	...	....	...	30
	December	16	32	2	1	3	12	1	26	0	....	...	....	...	31
	Spring	128	58	13	12	80	166	41	31	18	S. 82 47 W.	.22	....	...	184
	Summer	78	90	12	12	119	127	42	36	31	S. 55 33 W.	.16	....	...	184
	Autumn	47	103	3	8	35	88	8	43	24	N. 22 0 W.	.14	....	...	121
	Winter	76	102	9	11	22	67	8	55	6	N. 2 48 W.	.31	....	...	118
	The year[3]	...	...	...	...	...	...	...	...	...	N. 52 20 W.	.13	....	...	608
35. North-western Arizona.[1]	Spring	614	171	203	350	516	254	127	263	18	S. 74 17 E.	.03	S. 8° W.	.02	858
	Summer	183	155	127	389	668	275	144	119	31	S. 6 41 E.	.36½	S. 2 E.	.37	705
	Autumn	578	245	171	268	358	198	126	199	24	N. 31 51 E.	.11	N. 18½ E.	.09	760
	Winter	841	279	198	183	223	193	215	277	6	N. 1 43 W.	.31	N. 7½ W.	.30	808
	The year[3]	...	...	...	...	...	...	...	...	...	N. 76 50 E.	.03	....	...	3131
36. North-eastern Arizona.[2]	Spring	166	119	60	87	289	499	515	250	...	S. 71 45 W.	.44½	S. 34 W.	.07	706
	Summer	239	155	125	157	386	327	578	251	...	S. 72 30 W.	.30	S. 81 E.	.10	706
	Autumn	285	145	76	156	335	477	721	352	...	S. 81 50 W.	.40	N. 39 W.	.03	789
	Winter	302	108	63	110	302	401	647	346	...	S. 87 35 W.	.42	N. 32 W.	.07	785
	The year[3]	...	...	...	...	...	...	...	...	...	S. 78 46 W.	.38	....	...	2986

[1] Camps El Dorado and Willow Grove and Fort Mojave. [2] Fort Defiance.
[3] Computed from the resultants for the seasons.

(No. 37.) **Southwestern Utah.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Harrisburg,	James Lewis,	2	6	1867, 1868 and 1869.
Heberville,	Harrison Pearce,	0	8	1861 and 1862.
Rockville,	Andrew L. Siber,	0	5	1866.
St. George,	H. Pearce & G. A. Burgon,	3	3	1862 to 1866 inclusive, and 1869.
Vineland,	Andrew L. Siber,	0	2	1864.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
37. Aggregate.	Surface winds.	Spring	283	51	92	94	146	340	485	276	188	N. 49° 48′ W.	.48½			
		Summer	45	17	41	97	310	453	340	175	157	S. 51 59 W.	.51½			
		Autumn	227	86	47	69	170	294	315	131	90	S. 84 15 W.	.32			
		Winter	370	128	81	42	149	221	301	193	113	N. 56 17 W.	.29½			
		The year[1]	...	...	...	...	...	...	...	...	...	S. 83 28 W.	.34			
	Motion of clouds.	Spring	53	89	167	137	121	153	167	94	...	S. 5 54 W.	.14½	S. 76° W.	.12	
		Summer	26	125	128	100	236	140	47	53	...	S. 22 13 E.	.32	S. 6½ E.	.18	
		Autumn	53	156	187	101	62	125	107	41	...	S. 78 27 E.	.18	N. 42 E.	.11	
		Winter	37	120	226	113	52	111	102	132	...	N. 87 39 E.	.13	N. 15 E.	.12	
		The year[1]	...	...	...	...	...	...	...	...	...	S. 41 0 E.	.16			
	The two combined.	Spring	336	140	259	231	267	493	652	370	188	S. 83 40 W.	.25½	N. 61 W.	.08	
		Summer	71	142	169	197	546	593	387	228	157	S. 35 54 W.	.38½	S. 11 W.	.25	
		Autumn	280	242	234	170	232	419	422	172	90	S. 76 28 W.	.14	N. 52 E.	.05½	
		Winter	407	248	307	155	201	332	403	325	113	N. 45 56 W.	.15½	N. 22 E.	.19	
		The year[1]	...	...	...	...	...	...	...	...	...	S. 70 3 W.	.19½	....	...	2556

[1] Computed from the resultants for the seasons.

(Nos 38 to 50.) **New Mexico**, north of latitude 35°.

Observed at the following military posts, by officers connected therewith, viz. :—

Place of observation.	Aggregate length of time. yrs	mos.	Date.
Abiquiu,	0	3	July, August and September, 1851.
Albuquerque,	13	7	1849 to 1861 and 1863 to 1867, both inclusive.
Camp Cimarron,	1	0	1868 and 1869.
Camp Plummer,	1	10	1867, 1868 and 1869.
Cantonment Burgwin,	5	2	1854 to 1860 inclusive.
Cebolletta,	2	1	1849, 1850 and 1851.
Fort Bascom,	3	1	1864, 1865, 1866 and 1869.
Fort Fauntleroy,	0	11	1860 and 1861.
Fort Lowell,	0	9	1868 and 1869.
Fort Union,	16	7	1851 to 1869 inclusive.
Fort Wingate,	6	4	1863 to 1869 inclusive.
Laguna,	0	2	1852.
Las Vegas,	1	7	1850 and 1851.
Rayado,	0	2	1851.
Santa Fé (Fort Marcy),	14	8	1849 to 1867 inclusive.
Taos,	0	2	May and June, 1850.

(Nos. 38 to 43.) **New Mexico.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
38. Fort Wingate.	January	71	103	58	54	29	83	119	134	0	....	...	....	...	217
	February	40	52	55	83	21	120	93	100	0	....	...	....	...	198
	March	58	59	56	70	42	103	141	124	0	....	...	....	...	217
	April	41	63	76	64	51	105	131	99	0	....	...	....	...	210
	May	29	58	76	72	37	92	125	68	1	....	...	....	...	217
	June	41	44	57	69	71	79	112	64	3	....	...	....	...	180
	July	42	43	67	81	79	73	109	53	11	....	...	....	...	186
	August	28	23	85	80	66	82	66	30	5	....	...	....	...	155
	September	43	45	74	102	59	106	120	71	9	....	...	....	...	210
	October	28	51	75	88	25	94	99	73	0	....	...	....	...	186
	November	38	36	60	80	47	106	116	82	20	....	...	....	...	210
	December	64	84	62	83	29	56	100	147	12	....	...	....	...	217
	Spring	128	180	208	206	130	300	397	291	1	S. 85° 25′ W.	.18	N. 60° W.	.06	644
	Summer	111	110	209	230	216	234	287	147	19	S. 23 3 W.	.17½	S. 28° E.	.13½	521
	Autumn	109	132	209	270	131	306	335	226	29	S. 51 4 W.	.16	S. 6 E.	.06	606
	Winter	175	239	175	220	79	259	312	381	12	N. 53 33 W.	.18	N. 5 W.	.15	632
	The year[3]	...	...	...	...	...	...	...		...	S. 71 42 W.	.13½	....	...	2403
39. Ceboletta and Laguna.	Spring	28	51	18	25	31	116	86	96	...	N. 89 34 W.	.36½			
	Summer	69	35	50	102	77	71	132	71	...	S. 57 5 W.	.17			
	Autumn	61	16	34	72	61	71	153	161	...	N. 83 47 W.	.35			
	Winter	57	20	48	15	38	119	232	200	...	N. 80 7 W.	.54			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 88 31 W.	.34½			
40. North-western New Mexico.[1]	Spring	168	249	241	243	176	497	564	429	1	N. 86 45 W.	.24½	N. 59 W.	.08	
	Summer	180	199	283	368	329	410	434	220	19	S. 25 54 W.	.18½	S. 35 E.	.17	
	Autumn	170	226	261	372	195	473	506	417	29	S. 69 36 W.	.18	S. 20½ E.	.04	
	Winter	232	319	262	253	117	402	569	614	12	N. 63 19 W.	.25	N. 17 W.	.14½	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 81 56 W.	.18			
41. Camp Plummer and Fort Lowell. Surface winds.	Spring	49	189	61	47	30	92	163	77	28	N. 26 39 W.	.16½	S. 22 W.	.04	
	Summer	45	137	52	21	30	90	86	34	56	N. 9 51 W.	.10½	S. 25 E.	.09	
	Autumn	71	181	21	29	12	123	82	86	20	N. 23 15 W.	.24½	N. 42 W.	.06	
	Winter	89	215	58	54	23	122	132	79	41	N. 9 51 W.	.25	N. 16 E.	.07	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 17 46 W.	.19			
Motion of clouds.	Spring	6	3	39	16	17	13	48	3	...	S. 14 10 W.	.19½	S. 63 W.	.21	
	Summer	12	11	46	10	12	9	47	5	...	S. 61 47 E.	.03	N. 51½ W.	.14	
	Autumn	17	11	51	33	4	3	16	10	...	N. 87 36 E.	.39½	N. 66 E.	.28	
	Winter	11	7	15	18	18	9	9	4	...	S. 38 22 E.	.25½	S. 15 E.	.11	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 53 56 E.	.16			
42. Cantonment Burgwin.	January	118	38	50	28	165	36	53	29						
	February	73	12	36	15	144	13	43	19						
	March	74	8	47	13	149	19	57	23						
	April	63	7	50	16	155	20	56	10						
	May	72	4	63	6	161	14	40	8						
	June	71	4	36	10	159	8	53	12						
	July	63	7	46	1	146	5	71	3						
	August	67	8	47	34	190	24	65	5						
	September	90	21	58	40	249	30	49	6						
	October	114	12	36	36	292	36	34	16						
	November	157	11	35	20	244	32	36	14						
	December	158	12	34	33	238	65	46	17						
	Spring	209	19	160	35	465	53	153	41	...	S. 4 25 W.	.24½			
	Summer	201	19	129	45	495	37	189	20	...	S. 9 38 W.	.29			
	Autumn	361	44	129	96	785	98	119	36	...	S. 1 37 E.	.30½			
	Winter	349	62	120	76	547	114	142	65	...	S. 11 52 W.	.17			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 5 23 W.	.25			
43. Northern New Mexico.[2]	Spring	277	214	288	98	512	172	423	136	28	S. 36 32 W.	.10	N. 23½ W.	.03½	
	Summer	266	205	241	83	542	228	404	71	56	S. 29 35 W.	.16½	S. 48 W.	.05	
	Autumn	449	254	201	168	801	306	217	133	20	S. 3 53 W.	.16½	S. 31 E.	.06½	
	Winter	449	284	193	148	588	245	283	148	41	S. 29 16 W.	.05½	N. 15 E.	.06	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 22 36 W.	.12			

[1] Observed at Ceboletta, Laguna and Forts Fauntleroy and Wingate.
[2] Abiquiu, Camp Plummer, Cantonment Burgwin, Fort Lowell and Taos; upper and lower currents combined.
[3] Computed from the resultants for the seasons.

(Nos. 44 to 48.) **New Mexico.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
44. Santa Fé.[1]	January	303	143	59	90	80	206	213	341						
	February	230	138	85	107	81	174	125	361						
	March	106	89	54	132	89	206	168	286						
	April	119	181	92	144	146	272	271	245						
	May	80	86	48	131	109	280	202	199						
	June	62	97	78	186	109	302	106	131						
	July	80	143	105	218	161	256	92	165						
	August	119	149	137	218	167	179	101	168						
	September	120	168	110	209	199	321	175	241						
	October	182	180	90	187	240	275	188	217						
	November	211	145	73	142	95	216	190	627						
	December	266	136	61	82	77	187	194	295						
	Spring	305	356	194	407	344	758	641	730	...	S. 84° 21′ W.	.26			
	Summer	261	389	320	622	437	737	299	464	...	S. 11 59 W.	.15½			
	Autumn	513	493	273	538	534	812	553	1085	...	N. 79 46 W.	.19			
	Winter	799	417	205	279	238	567	532	997	...	N. 44 21 W.	.33			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 82 17 W.	.18			
45. Albuquerque.	January	381	206	121	30	216	79	183	106						
	February	310	137	108	59	161	78	231	218						
	March	189	116	93	92	317	134	269	112						
	April	159	69	169	120	279	130	309	124						
	May	82	46	102	58	298	130	331	55						
	June	133	28	69	71	256	154	268	48						
	July	90	30	104	126	390	137	281	56						
	August	80	48	132	109	206	158	196	140						
	September	150	91	133	136	242	130	271	65						
	October	191	121	224	133	226	116	232	68						
	November	290	118	183	94	212	75	280	128						
	December	426	201	215	110	185	86	185	141						
	Spring	430	231	364	270	894	394	909	291	...	S. 50 6 W.	.23½			
	Summer	303	106	305	306	852	449	745	244	...	S. 37 24 W.	.32			
	Autumn	631	330	540	363	680	321	783	261	...	S. 55 5 W.	.05			
	Winter	1117	544	444	199	562	243	599	465	...	N. 7 53 W.	.23			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 65 39 W.	.12			
46. Northern Central New Mexico.[2]	Spring	735	587	558	677	1238	1152	1550	1021	...	S. 68 2 W.	.23½	S. 43½° W.	.10	
	Summer	564	495	625	928	1289	1186	1044	708	...	S. 28 47 W.	.23	S. 10 E.	.19	
	Autumn	1144	823	813	901	1214	1133	1336	1346	...	N. 88 37 W.	.12	N. 63 E.	.03	
	Winter	1916	961	649	478	800	810	1131	1462	...	N. 29 10 W.	.27	N. 3½ E.	.24½	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 85 15 W.	.14½			
47. Las Vegas.	Spring	54	55	39	46	81	86	81	47	...	S. 53 18 W.	.16½			
	Summer	33	22	40	30	69	74	89	25	...	S. 47 9 W.	.29½			
	Autumn	37	24	31	40	95	57	55	40	...	S. 30 12 W.	.25			
	Winter	99	56	34	25	74	138	146	88	...	N. 86 55 W.	.32½			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 58 14 W.	.23½			
48. Fort Union.	January	290	132	57	156	132	110	136	399						
	February	214	123	74	124	128	150	161	390						
	March	264	147	70	117	154	155	189	421	1					
	April	240	144	60	125	173	198	192	262						
	May	167	108	62	123	327	241	343	297	2					
	June	128	82	97	150	284	246	193	187						
	July	103	84	105	187	423	235	189	199						
	August	197	124	110	161	386	239	190	227						
	September	245	116	90	172	286	251	198	240						
	October	346	144	92	199	251	161	152	338	1					
	November	377	131	86	145	173	135	169	412						
	December	393	141	69	169	170	147	149	495						
	Spring	671	399	192	365	654	594	724	980	3	N. 74 8 W.	.25			
	Summer	428	290	312	498	1093	720	572	613	...	S. 36 1 W.	.24			
	Autumn	968	391	268	516	710	547	519	990	1	N. 55 16 W.	.17			
	Winter	897	396	200	449	430	407	446	1284	...	N. 38 49 W.	.30			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 74 29 W.	.18½			

[1] Fort Marcy. [2] Albuquerque and Santa Fé.
[3] Computed from the resultants for the seasons.

(Nos. 49 and 50.) **New Mexico.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
49. Fort Bascom.	January	15	87	0	45	18	21	0	0	...	....	...	....	...	62
	February	26	85	9	14	2	47	64	8	...	....	...	....	...	85
	March	4	37	44	24	29	143	48	43	...	....	...	....	...	124
	April	39	96	50	19	27	21	3	15	...	....	...	....	...	120
	May	14	100	41	32	36	11	25	20	...	....	...	....	...	93
	June	8	60	21	106	46	15	8	6	...	....	...	....	...	90
	July	1	17	35	54	76	103	23	0	...	....	...	....	...	93
	August	10	32	20	82	41	57	10	27	...	....	...	....	...	93
	September	8	76	26	36	70	34	14	6	...	....	...	....	...	90
	October	1	29	40	144	35	25	5	0	...	....	...	....	...	93
	November	0	33	30	30	37	64	42	34	...	....	...	....	...	90
	December	8	55	20	17	41	9	22	14	...	....	...	....	...	62
	Spring	57	233	135	75	92	175	76	78	...	N. 85° 15′ E.	.10½	....	...	337
	Summer	19	109	76	242	163	175	41	33	...	S. 21 54 E.	.42½	....	...	276
	Autumn	9	138	96	210	142	123	61	40	...	S. 34 21 E.	.36	....	...	273
	Winter	49	227	29	76	61	77	86	22	...	N. 56 56 E.	.16	....	...	209
	The year[2]	...	...	...	...	...	...	...	...	...	S. 45 29 E.	.21	....	...	1095
50. North-eastern New Mexico.[1]	Spring	788	692	379	505	861	892	970	1116	...	N. 79 25 W.	.19	N. 67½° W.	.07½	
	Summer	528	451	543	797	1460	1020	864	712	...	S. 25 25 W.	.24	S. 3 E.	.22	
	Autumn	1063	584	467	806	994	754	694	1108	...	N. 73 51 W.	.09	N. 56½ E.	.03½	
	Winter	1052	689	691	554	569	624	695	1405	...	N. 26 20 W.	.20	N. 10 E.	.17½	
	The year	3431	2416	2080	2662	3884	3290	3223	4341	...	N. 87 45 W.	.11½			

[1] Observed at Las Vegas, Rayado, Forts Bascom and Union and Camp Cimarron.
[2] Computed from the resultants for the seasons.

(Nos. 51 to 57.) **Colorado**, south of latitude 40°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Carson City.	Thomas Macon,	0	1	December, 1869.
Central City,	W. D. McLain,	1	5	1860, 1861 and 1862.
Denver City,	D. C. Collier & F. J. Stanton,	0	2	October and November, 1859.
Fort Garland,	Post Surgeon,	8	10	1858 to 1869 inclusive.
Fort Lyon,	Post Surgeon,	3	5	1861 to 1863 and 1867 to 1869, both inclusive.
Ft. Massachusetts,	Post Surgeon,	4	8	1852 to 1858 inclusive.
Fort Reynolds,	Post Surgeon,	1	8	1868 and 1869.
Fort Wise,	Post Surgeon,	1	7	1860, 1861 and 1862.
Fountain,	Arthur M. Merriam,	0	1	August, 1860.
Golden City,	E. L. Berthoud,	0	9	1860 and 1867.
Montgomery,	James Luttrell,	0	6	1863 and 1864.
Mountain City,	W. D. McLain,	1	5	1860, 1861 and 1862.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
51. Central Colorado.[1]	Surface winds.	Spring	27	41	57	61	3	241	208	107	51	S. 75° 22′ W.	.42			
		Summer	20	24	22	78	21	216	124	82	14	S. 61 2 W.	.46			
		Autumn	8	44	18	81	28	297	46	70	103	S. 43 56 W.	.41			
		Winter	41	55	25	11	29	332	175	162	32	S. 80 20 W.	.53			
		The year[2]	...	...	...	...	...	...	...	...	...	S. 66 12 W.	.44½			
	Motion of clouds.	Spring	4	27	33	11	4	32	124	47	...	N. 79 39 W.	.43			
		Summer	6	0	8	0	1	2	20	5	...	N. 67 13 W.	.44			
		Autumn	1	10	0	9	0	13	0	5	...	S. 10 11 E.	.10½			
		Winter	16	10	2	0	2	13	69	14	...	N. 74 36 W.	.65			
		The year[2]	...	...	...	...	...	...	...	...	...	N. 77 34 W.	.37			
	The two combined.	Spring	31	68	90	72	7	273	332	154	51	S. 81 57 W.	.41½	N. 5° W.	.09	
		Summer	26	24	30	78	22	218	144	87	14	S. 63 47 W.	.45	S. 4½ W.	.05	
		Autumn	9	54	18	90	28	310	46	75	103	S. 43 18 W.	.39	S. 46½ E.	.19	
		Winter	57	65	27	11	31	345	244	176	32	S. 84 4 W.	.54	N. 57 W.	.16	
		The year[2]	...	...	...	...	...	...	...	...	...	S. 69 43 W.	.43	....	...	1614

[1] Observed at Carson, Central, Denver, Golden and Mountain Cities and at Fountain and Montgomery.
[2] Computed from the resultants for the seasons.

(Nos. 52 to 57.) **Colorado.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
52. Fort Garland.	January	48	101	156	37	62	186	195	50						
	February	16	88	102	27	57	142	210	38						
	March	27	94	81	28	43	236	262	66						
	April	17	116	75	28	57	165	216	43						
	May	11	108	82	50	77	180	182	54						
	June	14	139	68	61	49	215	133	41						
	July	9	123	171	118	68	167	137	41						
	August	18	119	171	90	56	127	127	36						
	September	15	169	96	60	114	154	145	57						
	October	32	193	134	46	81	141	145	77						
	November	71	154	127	34	78	162	182	73						
	December	60	213	137	54	87	146	192	41						
	Spring	55	318	238	106	177	581	660	163	...	S. 67° 34′ W.	.30½			
	Summer	41	381	410	269	173	509	397	118	...	S. 5 5 E.	.14½			
	Autumn	118	516	357	140	273	457	472	207	...	S. 61 22 W.	.05			
	Winter	124	402	395	118	206	474	597	129	...	S 64 21 W.	.12			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 51 32 W.	.13½	....	...	3222
53. Fort Massachusetts.	Spring	159	110	32	86	183	299	255	120	...	S. 70 40 W.	.32½	....	...	399
	Summer	306	108	92	101	247	255	218	169	...	N. 89 21 W.	.18½	....	...	460
	Autumn	316	127	66	87	241	313	214	124	...	S. 84 20 W.	.20½	....	...	485
	Winter	301	87	46	76	204	263	208	93	...	S. 87 2 W.	.23½	....	...	393
	The year[3]	...	...	...	...	...	...	...	...	...	S. 81 38 W.	.23½	....	...	1737
54. Southern Colorado.[1]	Spring	214	428	270	192	360	880	915	283	...	S. 68 42 W.	.31	S. 71° W.	.14	
	Summer	347	489	502	370	420	764	615	287	...	S. 37 19 W.	.11	S. 75 E.	.09	
	Autumn	434	643	423	227	514	770	686	331	...	S. 77 17 W.	.11	N. 48½ E.	.06	
	Winter	425	489	441	194	410	737	805	222	...	S. 75 53 W.	.15½	N. 5 E.	.03	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 67 35 W.	.16½	....	...	4931
55. Fort Reynolds.	Spring	3	7	75	64	9	26	167	18	0	S. 54 32 W.	.24	....	...	123
	Summer	0	19	74	171	7	21	252	8	0	S. 27 25 W.	.25	....	...	184
	Autumn	2	7	131	110	3	9	270	14	0	S. 45 55 W.	.18½	....	...	182
	Winter	2	1	81	26	1	20	208	24	0	S. 84 19 W.	.38½	....	...	121
	The year[3]	...	...	...	...	...	...	...	...	...	S. 57 21 W.	.25	....	...	610
56. Forts Lyon and Wise.	January	49	39	42	31	36	79	57	39	0	....	...	....	...	124
	February	21	60	54	49	58	77	68	30	4	....	...	....	...	141
	March	40	48	72	77	55	62	69	35	1	....	...	....	...	155
	April	46	58	65	51	37	80	59	53	0	....	...	....	...	150
	May	45	33	63	89	82	47	43	38	1	....	...	....	...	155
	June	21	37	90	95	75	43	50	20	1	....	...	....	...	150
	July	22	24	97	110	87	36	31	28	3	....	...	....	...	155
	August	35	32	110	102	103	49	28	8	4	....	...	....	...	155
	September	37	32	91	79	80	56	45	17	9	....	...	....	...	150
	October	30	81	51	58	71	49	57	44	1	....	...	....	...	155
	November	29	35	58	42	46	102	84	48	1	....	...	....	...	150
	December	36	33	49	55	79	90	53	18	1	....	...	....	...	155
	Spring	131	139	200	217	174	189	171	126	2	S. 22 7 E.	.11½	....	...	460
	Summer	78	93	297	307	265	128	109	56	8	S. 41 12 E.	.38½	....	...	460
	Autumn	96	148	200	179	197	207	186	109	11	S. 6 28 E.	.14½	....	...	455
	Winter	106	132	145	135	173	246	178	87	5	S. 23 41 W.	.16½	....	...	420
	The year[3]	...	...	...	...	...	...	...	...	...	S. 19 42 E.	.18	....	...	1795
57. South-eastern Colorado.[2]	Spring	134	146	275	281	183	215	338	144	2	S. 4 23 W.	.11½	N. 20 E.	.05½	583
	Summer	78	112	371	478	272	149	361	64	8	S. 28 20 E.	.31	S. 58 E.	.2	644
	Autumn	98	155	331	289	200	216	456	123	11	S. 37 12 W.	.17½	N. 71 W.	.08	637
	Winter	108	133	226	161	174	266	386	111	5	S. 48 13 W.	.19	N. 72 W.	.12	541
	The year[3]	...	...	...	...	...	...	...	...	...	S. 9 28 W.	.16½	....	...	2405

[1] Observed at Forts Garland and Massachusetts. [2] Observed at Forts Reynolds, Lyon and Wise.
[3] Computed from the resultants for the seasons.

(Nos. 58 to 64.) **Kansas**, west of longitude 97°.

Observed at the following military posts, by officers connected therewith, viz. :—

Place of observation.	Aggregate length of time. yrs.	mos.	Date.
Donner's Station,	1	7	1867, 1868 and 1869.
Fort Atkinson,	2	11	1850 to 1853 inclusive.
Fort Dodge,	2	2	1867, 1868 and 1869.
Fort Ellsworth or Fort Harker,	0	4	1866 and 1869.
Fort Hays,	2	5	1867, 1868 and 1869.
Fort Larned,	7	10	1860 to 1869 inclusive.

(Nos. 58 to 62.) **Kansas.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
58. Fort Atkinson.	Spring	226	128	109	173	168	83	54	59	...	N. 86° 51′ E.	.17	....	...	276
	Summer	45	88	99	322	250	85	25	40	...	S. 34 24 E.	.51	....	...	276
	Autumn	150	82	38	142	157	63	68	37	...	S. 40 23 E.	.12	....	...	212
	Winter	194	120	62	123	101	79	40	210	...	N. 1 21 W.	.19	....	...	240
	The year[2]	...	...	...	...	...	...	...	...	...	S. 59 32 E.	.15½	....	...	1004
59. Fort Dodge.	January	31	17	1	27	14	21	23	48	4					
	February	42	7	1	30	15	18	17	35	6					
	March	41	17	10	26	22	13	12	40	5					
	April	47	19	7	22	17	21	7	33	4					
	May	20	16	9	38	17	23	8	33	19					
	June	17	5	6	64	35	14	8	12	19					
	July	12	5	7	51	61	22	3	2	0					
	August	65	12	16	59	50	15	17	40	0					
	September	68	9	10	63	57	9	7	40	0					
	October	41	14	13	42	41	18	18	31	0					
	November	65	26	21	38	52	34	31	55	0					
	December	76	18	4	35	49	32	31	61	0					
	Spring	108	52	26	86	56	57	27	106	28	N. 16 37 W.	.12			
	Summer	94	22	29	174	146	51	28	54	19	S. 31 21 E.	.41½			
	Autumn	174	49	44	143	150	61	56	126	0	N. 67 41 W.	.01			
	Winter	149	42	6	92	78	71	71	144	10	N. 54 29 W.	.22½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 2 48 W.	.06			
60. South-western Kansas[1]	Spring	334	180	135	259	224	140	81	165	28	N. 64 14 E.	.11	N. 19½° E.	.11	
	Summer	139	110	128	496	396	136	53	94	19	S. 31 21 E.	.41½	S. 25½ E.	.34	
	Autumn	324	131	82	285	307	124	124	163	0	S. 37 25 E.	.05	N. 82 W.	.03½	
	Winter	343	162	68	215	179	150	111	345	10	N. 25 33 W.	.18½	N. 34½ W.	.25½	
	The year	1140	583	413	1255	1106	550	369	767	57	S. 55 10 E.	.08			
61. Donner's Station.	January	27	0	25	4	11	11	14	1	0	....	...	....	...	31
	February	62	9	20	11	23	23	19	4	0	....	...	....	...	57
	March	49	6	37	12	24	24	25	9	0	....	...	....	...	62
	April	30	11	34	32	13	22	28	7	0	....	...	....	...	60
	May	33	4	17	23	10	32	29	20	0	....	...	....	...	62
	June	10	8	15	10	7	9	18	13	0	....	...	....	...	30
	July	11	3	16	15	4	12	20	12	0	....	...	....	...	31
	August	16	8	19	8	6	8	17	11	0	....	...	....	...	31
	September	22	4	15	11	6	7	15	10	0	....	...	....	...	30
	October	39	18	21	39	8	11	26	24	0	....	...	....	...	62
	November	28	3	19	51	36	13	17	13	0	....	...	....	...	60
	December	32	18	14	47	11	13	39	12	0	....	...	....	...	62
	Spring	112	21	88	67	47	78	82	36	0	N. 77 23 W.	.02½	....	...	184
	Summer	37	19	50	33	17	29	55	36	0	N. 43 19 W.	.07½	....	...	92
	Autumn	89	25	55	101	50	31	58	47	0	S. 83 41 E.	.07	....	...	152
	Winter	121	27	59	62	45	47	72	17	0	N. 8 51 E.	.07	....	...	150
	The year[2]	...	...	...	...	...	...	...	...	...	N. 1 56 E.	.03	....	...	578
62. Fort Hays. Surface wind.	January	47	20	8	28	36	8	14	25	0	....	...	....	...	62
	February	34	18	15	23	9	24	13	35	0	....	...	....	...	57
	March	30	19	14	12	36	23	22	30	0	....	...	....	...	62
	April	29	18	19	12	25	29	19	29	0	....	...	....	...	60
	May	14	15	18	28	69	28	2	12	0	....	...	....	...	62
	June	3	8	9	24	103	24	5	4	0	....	...	....	...	60
	July	0	6	2	29	116	31	1	1	0	....	...	....	...	62
	August	10	22	24	46	114	52	3	5	3	....	...	....	...	93
	September	33	39	17	24	93	46	4	14	0	....	...	....	...	90
	October	41	45	22	18	76	45	12	33	0	....	...	....	...	93
	November	48	22	24	27	51	33	17	48	0	....	...	....	...	90
	December	69	34	19	17	37	21	20	52	0	....	...	....	...	93
	Spring	73	52	51	52	130	80	43	71	0	S. 21 43 W.	.12	....	...	184
	Summer	13	36	35	99	333	107	9	10	3	S. 5 7 E.	.67½	....	...	215
	Autumn	122	106	63	69	220	124	33	95	0	S. 0 41 W.	.10	....	...	273
	Winter	150	72	42	68	82	53	47	112	0	N. 11 24 W.	.18	....	...	212
	The year[2]	...	...	...	...	...	...	...	...	...	S. 1 47 W.	.18	....	...	884
62. Fort Hays. Motion of clouds.	Spring	3	9	12	10	10	15	5	1	...	S. 27 23 E.	.30½	S. 27 W.	.17½	92
	Summer	8	1	9	2	10	4	10	2	...	S. 45 0 W.	.13	N. 85 W.	.31	62
	Autumn	17	6	30	11	16	11	5	0	...	S. 70 35 E.	.32	N. 85 E.	.08	91
	Winter	5	15	37	10	11	1	3	6	...	N. 88 41 E.	.53	N. 67 E.	.33	91
	The year[2]	...	...	...	...	...	...	...	...	...	S. 62 31 E.	.25	....	...	336

[1] Observed at Forts Atkinson and Dodge.

[2] Computed from the resultants for the seasons.

(Nos. 63 and 64.) **Kansas.—*Continued.***

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
63. Fort Larned.	January	93	115	52	35	30	102	109	110	...	....	...	....	...	217
	February	90	93	62	31	79	114	105	97	...	....	...	....	...	226
	March	139	96	72	50	88	88	106	89	...	....	...	....	...	248
	April	132	91	70	63	94	54	123	83	...	....	...	....	...	240
	May	51	56	92	103	112	92	93	43	...	....	...	....	...	217
	June	18	80	85	92	138	118	73	19	...	....	...	....	...	210
	July	32	75	64	79	128	147	87	13	...	....	...	....	...	217
	August	19	76	88	114	110	137	88	10	...	....	...	....	...	217
	September	34	91	49	94	104	202	86	32	...	....	...	....	...	240
	October	95	101	76	92	77	153	143	73	...	....	...	....	...	279
	November	137	113	56	31	43	135	132	162	...	....	...	....	...	270
	December	127	123	45	44	41	135	169	139	...	....	...	....	...	279
	Spring	322	243	234	216	294	234	322	215	...	N. 67° 25′ W.	.05	....	...	705
	Summer	69	231	237	285	376	402	248	42	...	S. 3 48 E.	.32	....	...	640
	Autumn	266	305	181	217	224	490	361	267	...	S. 81 13 W.	.15	....	...	789
	Winter	310	331	159	110	150	351	383	346	...	N. 52 20 W.	.18	....	...	722
	The year[2]	...	...	...	...	...	...	...	...	...	S. 60 19 W.	.09	....	...	2860
64. Western Central Kansas.[1] Surface winds.	Spring	507	316	373	335	471	392	447	322	0	S. 77 12 W.	.04			
	Summer	119	286	322	417	726	538	312	88	3	S. 3 37 E.	.36½			
	Autumn	523	467	322	421	538	662	486	428	0	S. 64 16 W.	.09			
	Winter	591	435	263	243	282	465	543	487	0	N. 45 49 W.	.20			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 41 18 W.	.09			
Motion of clouds.	Spring	3	9	12	10	10	15	5	1	...	S. 27 22 E.	.30½	S. 23° E.	.24	
	Summer	8	1	8	2	10	4	10	2	...	S. 45 0 W.	.13	S. 73 W.	.14	
	Autumn	37	21	34	11	17	12	27	3	...	N. 42 34 E.	.17	N. 22 E.	.19	
	Winter	17	19	42	12	21	8	41	19	...	N. 23 41 E.	.05	N. 15 W.	.10	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 45 11 E.	.07			
2 preceding combined	Spring	510	325	385	345	481	407	452	323	0	S. 67 51 W.	.03½	N. 11 E.	.12	
	Summer	127	287	330	419	736	542	322	90	3	S. 3 23 E.	.36	S. 19 E.	.24	
	Autumn	560	488	356	432	555	674	513	431	0	S. 66 9 W.	.18	N. 61 W.	.11	
	Winter	608	454	305	255	303	473	584	506	0	S. 45 4 W.	.19	N. 89½ W.	.08	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 22 15 W.	.14½			

[1] Observed at Douner's Station, Forts Ellsworth or Harker, Hays and Larned.
[2] Computed from the resultants for the seasons.

(Nos. 65 to 67.) **Northeastern Indian Territory.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Eh-yoh-hee,	....	0	8	1860.
Fort Gibson,	Post Surgeon,	28	8	1828 to 1857 inclusive.
Fort Wayne,	Post Surgeon,	1	0	1840.
Lee's Creek,	....	0	2	1860.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
65. Fort Gibson.	January	361	231	201	367	324	162	99	278						
	February	318	183	178	343	252	196	96	256						
	March	274	240	166	325	356	209	121	238						
	April	180	146	184	509	339	241	107	210						
	May	119	174	163	639	389	212	83	123						
	June	113	130	165	632	476	276	84	70						
	July	54	129	153	576	619	252	89	110						
	August	114	172	258	468	501	232	94	111						
	September	178	279	211	484	429	165	80	111						
	October	246	283	194	497	336	105	96	208						
	November	302	264	193	412	309	125	101	255						
	December	383	242	162	438	198	119	125	279						
	Spring	573	560	513	1473	1084	662	311	571	...	S. 32° 9′ E.	.25	S. 27° W.	.04	
	Summer	281	431	576	1676	1596	760	267	291	...	S. 22 41 E.	.46½	S. 6 E.	.25	
	Autumn	726	826	598	1393	1074	395	277	574	...	S. 62 41 E.	.23	N. 35 E.	.09	
	Winter	1062	656	541	1148	774	477	320	813	...	N. 73 5 E.	.10½	N. 14 W.	.22	
	The year	2642	2473	2228	5690	4528	2294	1175	2249	...	S. 40 45 E.	.24	....	...	10472

(Nos. 66 and 67.) **Northeastern Indian Territory.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
66. Fort Wayne.	January	0	6	0	0	0	12	0	13						
	February	4	6	3	10	2	4	0	0						
	March	1	15	4	14	0	0	5	22						
	April	0	4	0	34	1	3	3	17						
	May	0	2	2	18	3	2	1	3						
	June	0	0	20	28	5	5	0	2						
	July	0	5	9	31	4	11	0	2						
	August	0	10	8	12	11	17	4	0						
	September	2	10	15	13	6	8	2	4						
	October	8	4	7	10	10	7	4	12						
	November	13	8	9	4	2	15	4	5						
	December	10	7	3	9	3	16	5	9						
	Spring	1	21	6	66	4	5	9	42	...	S. 71° 6′ E.	.17½			
	Summer	0	15	37	71	20	33	4	4	...	S. 41 1 E.	.58			
	Autumn	23	22	31	27	18	30	10	21	...	S. 75 58 E.	.11			
	Winter	14	19	6	19	5	32	5	22	...	N. 79 24 W.	.08½			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 48 22 E.	.19			
67. Aggregate of all stations. Surface winds.	Spring	581	591	521	1573	1105	727	328	673	9	S. 30 16 E.	.24			
	Summer	297	470	643	1780	1702	812	282	352	0	S. 23 1 E.	.45½			
	Autumn	788	859	641	1440	1138	434	303	697	0	S. 63 43 E.	.20½			
	Winter	1080	675	549	1185	789	511	330	857	0	N. 72 51 E.	.10			
	The year	2746	2595	2354	5978	4734	2484	1243	2579	9	S. 39 48 E.	.23			
Motion of clouds.	Spring	5	3	0	0	10	15	16	11	...	S. 79 58 W.	.54½	N. 84° W.	.21	
	Summer	1	4	11	4	14	15	32	16	...	S. 71 45 W.	.36½	N. 86 W.	.02	
	Autumn	13	2	7	8	33	8	9	15	...	S. 30 7 W.	.23½	S. 66 E.	.22	
	Winter	4	0	0	7	4	8	2	12	...	S. 79 16 W	.31	N. 21 E.	.06½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 70 13 W.	.34½			
2 preceding combined.	Spring	586	594	521	1573	1115	742	344	684	9	S. 29 3 E.	.23	S. 59 W.	.03	
	Summer	298	474	654	1784	1716	827	314	368	0	S. 22 15 E.	.45	S. 8 E.	.23	
	Autumn	801	861	648	1448	1171	442	312	712	0	S. 62 44 E.	.20	N. 23½ E.	.10	
	Winter	1084	675	549	1192	793	519	332	869	0	S. 78 0 E.	.09½	N. 16 W.	.17	
	The year	2769	2604	2372	5997	4795	2530	1302	2633	9	S. 38 48 E.	.22			

[1] Computed from the resultants for the seasons.

(Nos. 68 to 76.) **Kansas**, east of longitude 97°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Atchison,	Dr. H. B. and Miss Clotilde Horn,	4	2	1865 to 1869 inclusive.
Avon,	Allen Crocker,	0	3	1866.
Baxter Springs,	Ingraham and Hyland,	2	6	1867, 1868 and 1869.
Burlingame,	Lucian Fish,	3	10	1857 to 1861 inclusive.
Burlington,	Allen Crocker,	0	11	1869.
Cayuga,	William H. Gilman,	0	1	April, 1858.
Celesteville,	Rev. J. H. Drummond,	1	2	1859 and 1860.
Council Grove,	A. Woodworth, M.D.,	4	6	1858, 1859 and 1865 to 1869 inclusive.
Crawfordsville,	Percy Daniels,	0	6	1869.
Fort Leavenworth,	Post Surgeon,	36	7	1831 to 1869 inclusive, except 1835.
Fort Riley,	Post Surgeon and others,	14	7	1853 to 1869 inclusive.
Fort Scott,	Post Surgeon,	10	3	1843 to 1853 inclusive.
Gardner,	G. F. Merriam and J. Scott,	1	4	1860, 1861 and 1862.
Holton,	Dr. James Walters,	2	8	1867, 1868 and 1869.
Junction City,	E. W. Seymour, M.D.,	0	3	1862.
Lawrence,	G. W. Brown and others,[1]	7	0	1857 to 1864 and 1867 to 1869 both inclusive.
Leavenworth City,	H. D. McCarty and others,[2]	6	11	1857 to 1862 and 1866 to 1869 all inclusive.

[1] W. J. R. Blackman, A. N. Fuller, N. L. G. Soule, Geo. W. Hollingworth and F. H. Snow.
[2] E. L. Berthoud, M. Shaw, Dr. J. Stayman and T. B. Stowett.

(Nos. 68 and 69.) **Kansas.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Lecompton,	Wm. T. Ellis and others,[1]	1	7	1859, 1860, 1861 and 1866.
Le Roy,	J. G. Shoemaker,	1	5	1867 and 1869.
Manhattan,	Isaac T. Goodnow and others,[2]	11	11	1857 to 1869 inclusive.
Mapleton,	S. O. Himoe, M.D.,	0	6	1857 and 1858.
Moneka,	J. O. Wattles & Celestia Wattles,	0	7	1858.
Neosho Falls,	B. F. Goss and Mrs. E. W. Groesbeck,	3	5	1859 to 1861 inclusive, 1868 and 1869.
Olatha,	W. Beckwith,	5	11	1864 to 1869 inclusive.
Paoli,	L. D. Walrad,	0	8	1869.
Ridgeway,	O. H. Brown,	0	2	1863.
Spring Hill,	Rev. J. H. Drummond,	1	2	1859 and 1860.
Topeka,	F. W. Giles,	0	6	1858.
Western Academy,	....	0	9	1850 and 1851.
Wyandotte,	John H. Millar,	0	3	1860.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
68. Fort Riley.[3]	January	267	149	50	67	206	252	282	174					
	February	230	133	73	123	278	150	185	144					
	March	244	188	90	116	293	169	182	175					
	April	197	171	125	125	246	157	222	165					
	May	188	124	127	139	289	188	195	115					
	June	96	106	99	162	463	174	118	93					
	July	112	149	159	201	441	182	70	53					
	August	136	188	150	210	440	177	99	56					
	September	162	146	113	190	419	187	97	100					
	October	227	162	123	142	257	264	160	119					
	November	261	172	101	130	254	232	233	214					
	December	366	165	63	120	246	292	322	170					
	Spring	629	483	342	380	828	514	599	455	...	S. 67° 22′ W.	.10½		
	Summer	344	443	408	573	1344	533	287	202	...	S. 13 33 E.	.33		
	Autumn	650	480	337	462	930	683	490	433	...	S. 31 52 W.	.12		
	Winter	863	447	186	310	730	694	789	488	...	N. 84 41 W.	.20½		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 32 47 W.	.13		
69. Eastern Central Kansas.[4] Surface wind.	Spring	1574	1109	770	903	1841	1305	1098	1387	469	S. 85 31 W.	.08		
	Summer	800	962	904	1523	3091	1333	491	462	642	S. 15 16 E.	.33½		
	Autumn	1389	906	682	974	2144	1278	974	1199	660	S. 39 44 W.	.11		
	Winter	1784	880	447	757	1553	1557	1476	1457	535	N. 82 58 W.	.15½		
	The year	5547	3857	2803	4157	8629	5473	4039	4505	2306	S. 33 25 W.	.11½		
Motion of clouds.	Spring	197	126	56	52	135	287	205	284	...	N. 75 17 W.	.33	N. 29° W.	.12
	Summer	83	102	86	129	206	249	223	158	...	S. 51 42 W.	.27	S. 19 E.	.15
	Autumn	127	83	89	80	157	209	207	210	...	S. 84 49 W.	.26	N. 86½ E.	.01
	Winter	117	89	62	66	134	149	213	177	...	N. 85 59 W.	.26	N. 3 E.	.04
	The year[5]	...	...	...	...	...	...	...	...	...	S. 85 15 W.	.26		
The two combined.	Spring	1771	1235	826	955	1976	1592	1303	1671	469	N. 87 44 W.	.10½	N. 12 W.	.09½
	Summer	883	1064	990	1652	3297	1582	714	620	642	S. 10 20 E.	.31	S. 33 E.	.26
	Autumn	1516	989	771	1054	2301	1487	1181	1409	660	S. 48 49 W.	.12	N. 31 W.	.01
	Winter	1901	969	509	823	1687	1706	1689	1634	535	N. 83 20 W.	.20	N. 45 W.	.16
	The year	6071	4257	3096	4484	9261	6367	4887	5334	2306	S. 43 35 W.	.12		

[1] Wm. A. McCormick and David G. Bacon.

[2] Rev. N. O. Preston, H. L. Denison, Agricultural College, B. F. Mudge and others.

[3] Beside the regular observations reported from this post to the Surgeon-General, and which are embodied in this table, another series, differing somewhat, appears to have been taken during many months of the years 1860 and 1862 to 1866 inclusive, and reported to the Smithsonian Institution. Both the series are embraced in the table for Eastern Central Kansas. The surface winds and the motion of the clouds are combined in the table.

[4] Observed at Burlingame, Council Grove, Fort Riley, Junction City and Manhattan.

[5] Computed from the resultants for the seasons.

(Nos. 70 to 73.) **Kansas.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
70. Fort Leavenworth.[1]	January	25	3	4	6	40	4	15	27	...	S. 88° 9′ W.	.21		
	February	30	2	1	9	36	5	8	22	...	N. 86 23 W.	.15		
	March	22	2	5	11	52	2	19	11	...	S. 25 2 W.	.27		
	April	17	5	1	8	62	2	9	16	...	S. 17 14 W.	.32		
	May	13	4	6	11	64	1	18	7	...	S. 6 40 W.	.42		
	June	8	1	3	14	72	2	7	13	...	S. 3 30 W.	.54½		
	July	5	6	5	15	73	6	3	11	...	S. 3 54 W.	.57		
	August	9	8	4	20	56	7	4	16	...	S. 4 7 E.	.40		
	September	14	8	6	19	43	9	11	10	...	S. 1 3 E.	.30		
	October	16	10	1	9	47	9	8	25	...	S. 42 51 W.	.21		
	November	14	7	4	5	46	10	14	18	...	S. 40 31 W.	.28		
	December	23	9	6	21	26	4	12	24	...	N. 59 44 W.	.4		
	Spring	1008	926	574	1550	2021	1173	949	1882	...	S. 39 28 W.	.12		
	Summer	592	898	812	2128	3000	1098	469	865	...	S. 17 38 E.	.36½		
	Autumn	1027	952	549	1560	2240	1022	742	1969	...	S. 28 39 W.	.11		
	Winter	1242	839	480	1357	1510	1079	1066	2489	...	N. 76 52 W.	.16		
	The year	3869	3615	2415	6595	8771	4372	3226	7205	...	S. 19 33 W.	.13		
71. Northeastern Kansas.[2] Surface wind.	Spring	1525	1657	874	2044	2714	1948	1244	2889	148	S. 45 14 W.	.11		
	Summer	940	1287	1006	2843	4129	2114	612	1388	92	S. 9 54 E.	.34		
	Autumn	1540	1435	724	2079	3132	2019	1015	2951	88	S. 43 34 W	.13		
	Winter	1941	1411	694	1804	2239	2164	1474	3693	79	N. 79 12 W.	.17½		
	The year	5946	5790	3298	8770	12214	8245	4345	10921	407	S. 33 35 W.	.13		
Motion of clouds.	Spring	140	240	77	116	135	509	481	458	...	N. 86 8 W	.39	N. 24° W.	.05
	Summer	101	134	104	120	206	594	461	295	...	S. 69 11 W.	.42½	S. 14 W.	.13
	Autumn	146	135	76	126	188	427	362	393	...	S. 85 0 W.	.37	S. 22 W.	.01
	Winter	204	267	84	157	164	399	455	415	...	N. 78 43 W.	.30½	N. 38 E.	.11
	The year[5]	...	...	...	...	...	...	...	...	...	S. 86 9 W.	.36½		
The two combined.	Spring	1665	1897	951	2160	2849	2457	1725	3347	148	S. 69 46 W.	.12½	N 10½ W.	.06
	Summer	1041	1421	1110	2963	4335	2708	1073	1683	92	S. 0 21 E.	.31	S. 27½ E.	.23½
	Autumn	1686	1570	800	2205	3320	2446	1377	3344	88	S. 54 7 W.	.15	N. 53 W.	.02
	Winter	2145	1678	778	1961	2403	2563	1929	4108	79	N. 79 6 W.	.19	N. 30½ W.	.16
	The year	6537	6566	3639	9289	12907	10174	6104	12482	407	S. 47 31 W.	.14½		
72. Eastern Kansas.[3] Surface wind.	Spring	646	537	325	671	1000	757	390	1144	460	S. 72 30 W.	.10		
	Summer	382	503	401	1040	1505	1127	192	403	675	S. 6 11 E.	.32½		
	Autumn	704	356	217	642	1089	746	320	845	637	S. 45 16 W.	.13		
	Winter	592	465	236	554	729	722	405	1207	535	N. 80 1 W.	.15		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 35 47 W.	.13		
Motion of clouds.	Spring	91	42	149	31	124	203	271	170	...	S. 81 44 W.	.31	N. 59 W.	.03
	Summer	89	86	233	74	208	362	384	145	...	S. 56 21 W.	.30	S. 22½ E.	.16
	Autumn	103	62	100	26	123	156	269	152	...	N. 89 32 W.	.33	N. 39 W.	.08
	Winter	48	54	99	17	48	118	160	87	...	N. 88 26 W.	.25	N. 23 E.	.07½
	The year[5]	...	...	...	...	...	...	...	...	...	S. 79 54 W.	.29		
The two combined.	Spring	737	579	474	702	1124	960	661	1314	460	S. 75 53 W.	.14	N. 23 W.	.06½
	Summer	471	589	634	1114	1713	1489	576	548	675	S. 4 26 W.	.29½	S. 24 E.	.22
	Autumn	807	418	317	668	1212	902	589	997	637	S. 58 43 W.	.15	N. 45 W.	.02½
	Winter	640	519	335	571	777	840	565	1294	535	N. 81 21 W.	.16	N. 21 W.	.13
	The year[5]	...	...	...	...	...	...	...	...	...	S. 49 34 W.	.15		
73. Surface winds at Smithsonian Stations, in Eastern, Central, Northeastern and Eastern Kansas, in the years 1854, '55, '56 & '57.[4] No. of observations.	Spring	24	17	27	24	46	14	29	80	...	N. 63 27 W.	.146	N. 3 W.	.20
	Summer	26	18	15	44	185	44	21	22	...	S. 2 37 W.	.443	S. 18 E.	.32
	Autumn	53	24	14	24	107	26	41	59	...	S. 60 2 W.	.176	N. 36 W.	.06
	Winter	35	15	18	22	50	42	32	40	...	S. 65 0 W.	.187	N. 42 W.	.08
	The year[5]	...	...	...	...	...	...	...	...	...	S. 40 57 W.	.180		
No. of miles.	Spring	219	277	270	253	553	114	326	1308	...	N. 52 29 W.	.259	N. 4 W.	.21
	Summer	76	105	48	126	740	229	80	140	...	S. 9 55 W.	.491	S. 14 E.	.44
	Autumn	363	162	45	94	617	193	197	514	...	N. 87 26 W.	.215	N. 20 W.	.07
	Winter	310	118	42	111	285	302	130	512	...	N. 70 25 W.	.289	N. 28 W.	.17
	The year[5]	...	...	...	...	...	...	...	...	...	S. 74 48 W.	.201		
M'n vel. in miles p.h'r.	Spring	9.12	16.29	10.00	10.54	12.02	8.14	11.24	16.35					
	Summer	2.92	5.83	3.20	2.86	4.00	5.20	3.81	6.36					
	Autumn	6.85	6.75	3.21	3.92	5.77	7.42	4.80	8.71					
	Winter	8.86	7.87	2.33	5.05	5.70	7.19	4.06	12.80					

[1] Separate months for the first four years only.

[2] Observed at Atchison, Cayuga, Fort Leavenworth, Leavenworth City, Lecompton, Ridgeway, Holton, Topeka, Western Academy and Wyandotte.

[3] Observed at Avon, Burlington, Celesteville, Council City, Gardner, Lawrence, Le Roy, Mapleton, Moneka, Neosko Falls, Olatha, Paola and Spring Hill.

[4] For note, see next page.

[5] Computed from the results for the seasons.

(Nos. 74 to 76.) **Kansas.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
74. Fort Scott.	January	227	95	93	116	209	204	186	167					
	February	222	183	72	86	176	162	124	189					
	March	217	171	117	119	210	154	125	192					
	April	160	171	121	125	267	120	84	130					
	May	131	167	126	113	301	174	117	80					
	June	77	138	135	152	369	159	79	61					
	July	81	178	148	121	303	263	66	63					
	August	151	187	134	123	265	203	73	69					
	September	153	153	107	130	281	212	76	75					
	October	169	123	92	87	206	216	168	145					
	November	140	165	78	80	209	172	147	186					
	December	233	81	71	94	210	202	181	150					
	Spring	508	509	364	357	778	448	326	402	...	S. 14° 56′ E.	.06		
	Summer	309	503	417	396	937	625	218	193	...	S. 17 12 E.	.25		
	Autumn	462	441	277	297	696	600	391	406	...	S. 48 24 W.	.11		
	Winter	682	359	236	296	595	568	491	506	...	S. 81 33 W.	.15		
	The year	1961	1812	1294	1346	3006	2241	1426	1507	...	S. 19 58 W.	.10½		
75. Baxter Springs.[1]	Spring	107	71	30	34	178	60	25	47	0	S. 3 48 E.	.10		
	Summer	52	49	11	90	262	117	12	20	1	S. 0 4 E.	.50		
	Autumn	159	82	14	96	223	115	5	62	0	S. 4 59 W.	.15		
	Winter	171	71	26	28	226	117	30	48	0	S. 34 38 W.	.12		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 5 11 W.	.21½		
76. Southeastern Kansas.[2]	Spring	615	580	394	391	956	508	351	449	0	S. 12 4 E.	.06	N. 46° E.	.07
	Summer	364	567	433	502	1240	797	233	224	1	S. 10 44 E.	.29	S. 27 E.	.20
	Autumn	636	537	302	425	936	755	400	518	0	S. 39 18 W.	.11	N. 58 W.	.04
	Winter	875	441	263	326	827	716	537	558	0	N. 88 24 W.	.14	N. 43½ W.	.15
	The year[3]	...	...	...	...	...	...	...	...	...	S. 18 48 W.	.11		

[1] Observed at Baxter Springs, Crawfordsville and Fort Scott.
[2] Surface winds and motion of clouds combined.
[3] Computed from the resultants for the seasons.

☞ Note to No. 73, Smithsonian Stations, page 396.

[4] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	12.72	4.12	6.28	7.13	7.56
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.86	1.83	1.11	1.33	1.36
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	2.86	1.73	1.35	1.97	1.46
Excess of the latter over the former	+1.00	—.10	+.24	+.64	+.10

(Nos. 77 to 79.) **Arkansas,** north of latitude 35°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bentonville,	Paul Graham,	1	8	1859, 1860 and 1861.
Buckhorn,	Armistead Younger,	0	2	1859.
Fort Smith,	Post Surgeon,	14	9	1840 to 1858 inclusive, except 1841 and 1851.
Gainesville,	James T. Davies,	0	2	1859.
Green Grove,	Robert Burris,	0	1	June, 1860.
Jacksonport,	G. A. Martin,	1	1	1859 and 1860.
Mountain Home,	J. S. Howard,	0	6	1860 and 1861.
Perryville,	W. H. Blackwell & H. F. Hardy,	2	1	1856 and 1859 to 1861 inclusive.
Yellville,	J. W. Weast & W. B. Flippin,	1	0	1859 and 1860.

(Nos. 77 to 79.) **Arkansas.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
77. Fort Smith.	January	136	198	351	134	102	157	372	125					
	February	123	128	280	87	99	137	318	158					
	March	105	136	373	117	139	155	248	155					
	April	105	128	369	141	227	173	249	105					
	May	108	122	430	121	259	135	275	76					
	June	64	95	424	121	339	157	183	46					
	July	76	94	428	134	290	149	124	41					
	August	89	193	479	122	180	182	131	50					
	September	140	158	506	145	188	156	165	74					
	October	99	168	507	127	128	181	194	150					
	November	161	171	382	98	142	131	257	188					
	December	154	193	360	87	131	168	328	138					
	Spring	318	386	1172	379	625	463	772	336	...	S. 43° 49′ E.	.12		
	Summer	229	382	1331	377	809	488	438	137	...	S. 50 11 E.	.31		
	Autumn	400	497	1395	370	458	468	616	412	...	S. 89 25 E.	.16½		
	Winter	413	519	991	308	332	462	1018	421	...	N. 18 19 W.	.05		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 62 51 E.	.13		
78. Northwestern Arkansas.[1] Surface wind.	Spring	474	447	1238	443	955	638	842	462	150	S. 22 20 E.	.11½		
	Summer	348	419	1390	470	1208	575	476	183	138	S. 40 38 E.	.30		
	Autumn	527	572	1448	464	673	576	658	492	195	S. 80 32 E.	.14		
	Winter	596	574	1049	380	498	604	1122	572	182	N. 47 15 W.	.06		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 46 26 E.	.11½		
Motion of clouds.	Spring	3	1	5	6	36	32	15	13	...	S. 36 25 W.	.56	S. 4° W.	.23
	Summer	15	5	18	13	48	41	43	46	...	S. 64 34 W.	.36	N. 8 W.	.07
	Autumn	14	16	8	43	15	33	37	27	...	S. 50 41 W.	.20	N. 58 E.	.19
	Winter	2	12	6	7	39	49	47	46	...	S. 69 25 W.	.48½	N. 70 W.	.15
	The year[3]	...	...	...	...	...	...	...	...	...	S. 54 32 W.	.39		
The two combined.	Spring	477	448	1243	449	991	670	857	475	150	S. 17 53 E.	12	S. 44 W.	.05
	Summer	363	424	1408	483	1256	616	519	229	138	S. 37 40 E.	.28	S. 36½ E.	.17
	Autumn	541	588	1456	507	688	609	695	519	195	S. 78 15 E.	.13	N. 46 E.	.08
	Winter	598	586	1055	387	537	653	1169	618	182	N. 61 25 W.	.06½	N. 47½ W.	.17
	The year	1979	2046	5162	1826	3472	2548	3240	1841	665	S. 40 18 E.	.10½		
79. Northeastern Arkansas.[2] Surface wind.	Spring	59	13	33	27	67	28	47	46	13	S. 79 50 W.	.11½		
	Summer	111	56	69	73	141	62	80	70	58	S. 19 50 W.	.05½		
	Autumn	132	42	60	66	114	97	37	98	80	N. 87 25 W.	.05½		
	Winter	64	24	40	25	86	44	76	29	50	S. 58 23 W.	.14		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 64 39 W.	.08½		
Motion of clouds.	Spring	1	0	1	1	9	6	21	7	...	S. 74 19 W.	.64	S. 55 W.	.36
	Summer	4	2	12	1	9	4	21	3	...	S. 67 6 W.	.10	S. 74 E.	.24
	Autumn	4	4	4	5	6	18	10	17	...	S. 82 2 W.	.36	S. 26 W.	.08
	Winter	23	1	2	0	9	1	8	6	...	N. 29 19 W.	.42	N. 18½ E.	.36
	The year[3]	...	...	...	...	...	...	...	...	...	N. 87 52 W.	.34½		
The two combined.	Spring	60	13	34	28	76	34	68	53	13	S. 78 48 W.	.18	S. 86½ W.	.07
	Summer	115	58	81	74	150	66	101	73	58	S. 31 6 W.	.06	S. 83 E	.08
	Autumn	136	46	64	71	120	115	47	115	80	S. 88 28 W.	.08	N. 40 E.	.04
	Winter	87	25	42	25	95	45	84	35	50	S. 76 35 W.	.13	N. 89 W.	.02
	The year[3]	...	...	...	...	...	...	...	...	...	S. 73 47 W.	.11		

[1] Observed at Bentonville, Fort Smith, Perryville, and Yellsville.
[2] Observed at Buckhorn, Gainesville, Green Grove, Jacksonport, and Mountain Home.
[3] Computed from the resultants for the seasons.

(Nos. 80 to 89.) **Missouri,** south of latitude 40°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Allenton,	Augustus Fendler,	1	1	1864, 1866 and 1868.
Augusta,	Conrad Mallinckrodt,	0	4	1859.
Bolivar,	James A. Race,	2	0	1859, 1860, 1861, 1868 and 1869.
Booneville,	Norris Sutherland,	2	0	1859, 1860 and 1861.
Cape Girardeau,	Rev. James Knoud,	1	3	1856 and 1857.

(Nos. 80 to 89.) **Missouri.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time yrs.	mos.	Date.
Carrollton,	John Campbell and others,[1]	1	10	1859 and 1860.
Cassville,	M. L. Wyrick,	1	10	1859, 1860 and 1861.
Dundee,	S. S. Bailey,	1	11	1859, 1860 and 1861.
Easton,	P. B. Sibley,	1	8	1864, 1865 and 1866.
Emerson,	W. B. Kizer,	0	5	1859.
Farmington,	Nathan P. Force,	0	6	1859.
Granwich,	....	0	8	1850 and 1851.
Greenfield,	S. B. Bowles, M.D.,	3	3	1859 to 1862 inclusive.
Greenville,	O. D. Dalton,	0	8	1859 and 1860.
Hannibal,	O. H. P. Lear & E. Duffield,	1	6	1854 and 1855.
Harrisonville,	John Christian,	10	3	1859 to 1869 inclusive.
Hematite,	John M. Smith,	1	9	1868 and 1869.
Hermann,	Philip Weber,	1	7	1859 and 1860.
Hermitage,	Miss Belle Moore,	2	3	1867, 1868 and 1869.
Hornersville,	W. H. Horner,	1	7	1859, 1860 and 1861.
Jefferson Barracks,	Post Surgeon,	28	0	1827 to 1830, 1832 to 1835 and 1841 to 1862, all inclusive.
Jefferson City,	Nicolas D. Wyl,	2	1	1867, 1868 and 1869.
Keytesville,	Charles Veatch,	0	5	1869.
Laborville,	William Muir,	0	7	1863 and 1864.
Lexington,	Joseph A. Wilson & others,[2]	2	0	1859, 1860 and 1861.
Oregon,	William Kaucher,	2	2	1867, 1868 and 1869.
Palmyra,	G. P. Comings,	1	4	1856 and 1857.
Paris,	W. F. Maxey,	2	1	1859 to 1862 inclusive.
Rhineland,	Charles Vogel,	0	7	1859 and 1860.
Richmond,	R. W. Finley,	0	8	1859 and 1860.
Rockport,	C. Q. Chandler, M.D.,	0	9	1856.
Rolla,	Homer Ruggles,	1	5	1868 and 1869.
St. Joseph,	Edward B. Neely,	1	7	1857, 1858 and 1869.
St. Louis,	Dr. G. Engelmann & others,[3]	22	10	1854 to 1869 inclusive. (More than one series.)
St. Louis Arsenal,	Post Surgeon,	13	4	1843 to 1856 inclusive.
Springfield,	J. A. Stephens,	1	4	1857 and 1858.
Stockton,	William Wells,	1	3	1859 and 1860.
Toronto,	B. D. Dodson,	0	10	1859 and 1860.
Tuscumbia,	William M. Lumpkin,	0	4	1859.
Union,	Dr. W. & Miss Belle Moore,	1	4	1866 and 1867.
Warrensburg,	Rev. J. E. Pollock,	1	2	1868 and 1869.
Warrenton,	Marion F. Hamaker and Mary A. Tidswell,	4	1	1859 to 1863 inclusive.
Waynesville,	B. G. Lingow,	0	4	1859.
Westport,	Rev. N. Scarritt,	0	6	1850 and 1851.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
80. Western and Central Missouri.[4]	Surface wind.	Spring	781	606	408	630	836	627	333	997	155	N. 46° 26′ W.	.05		
		Summer	710	695	636	1307	1774	1044	273	512	394	S. 19 55 E.	.27		
		Autumn	882	635	323	841	1153	657	299	876	383	S. 3 34 W.	.04½		
		Winter	846	585	345	486	762	740	293	1171	244	N. 49 45 W.	.13		
		The year[5]	...	...	...	...	...	...	...	...	...	S. 14 43 W.	.04½		
	Motion of clouds.	Spring	281	180	142	143	211	262	322	379	...	N. 66 10 W.	.23	N. 19½° E.	.11
		Summer	230	143	168	248	559	455	369	272	...	S. 39 28 W.	.28	S. 20 E.	.22
		Autumn	249	119	79	149	316	258	344	306	...	S. 83 28 W.	.26½	S. 26 W.	.02
		Winter	191	126	74	78	138	269	317	382	...	N. 73 23 W.	.37	N. 42 W.	.16
		The year[5]	...	...	...	...	...	...	...	...	...	S. 87 13 W.	.25		
	The two combined.	Spring	1062	786	550	773	1047	889	655	1376	155	N. 58 37 W.	.10	N. 10 W.	.09
		Summer	940	838	804	1555	2333	1499	642	784	394	S. 5 39 E.	.25	S. 25 E.	.23½
		Autumn	1131	754	402	990	1469	915	643	1182	383	S. 57 12 W.	.07½	S. 51½ E.	.01
		Winter	1037	711	419	564	900	1009	610	1553	244	N. 60 16 W.	.18	N. 35 W.	.15¼
		The year[5]	...	...	...	...	...	...	...	...	...	S. 62 7 W.	.08		

[1] S. J. Huffaker and D. J. Kirby. [2] Geo. W. Wilson, Jr., and P. S. Wilson.
[3] A. Wislizenus, M.D., Augustus Fendler, J. H. Lunemann, Rev. P. W. Koning, Rev. F. H. Stuntebeck, and Rev. I. Straetmans.
[4] Observed at Carrollton, Easton, Granwich, Harrisonville, Jefferson City, Keytesville, Lexington, Oregon, Richmond, Rockport, St. Joseph, Tuscumbia, Warrensburg, and Westport.
[5] Computed from the resultants for the seasons.

(Nos. 81 to 83.) **Missouri.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.
81. Southwestern Missouri.[1] Surface winds.	Spring	308	168	117	267	674	644	334	272	274	S. 38° 33′ W.	.29		
	Summer	132	194	224	588	896	767	279	176	531	S. 6 36 W.	.39		
	Autumn	298	150	138	285	526	577	237	290	595	S. 37 32 W.	.21½		
	Winter	421	185	119	275	622	591	368	344	426	S. 53 5 W.	.22		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 30 12 W.	.26½		
Motion of clouds.	Spring	19	15	10	11	90	83	99	18	...	S. 51 13 W.	.53	S. 52° W.	.17
	Summer	25	11	24	13	58	29	55	12	...	S. 42 50 W.	.28	N. 76½ E.	.10
	Autumn	23	23	24	37	74	57	64	28	...	S. 35 19 W.	.29½	S. 84½ E.	.11
	Winter	37	15	20	21	64	80	90	47	...	S. 67 54 W.	.39	N. 43 W.	.12
	The year[3]	...	...	...	...	...	...	...	...	...	S. 50 41 W.	.36½		
The two combined.	Spring	327	183	127	278	764	727	433	290	274	S. 40 41 W.	.31½	S. 88½ W.	.05
	Summer	157	205	248	601	954	796	334	188	531	S. 8 0 W.	.38	S. 32 E.	.17
	Autumn	321	173	162	322	600	634	301	318	595	S. 37 15 W.	.22	N. 11 E.	.05½
	Winter	458	200	139	296	686	671	458	391	426	S. 55 31 W.	.23½	N. 28 W.	.11
	The year[3]	...	...	...	...	...	...	...	...	...	S. 32 24 W.	.27½		
82. Surface winds at St. Joseph's in the year 1857.[2] No. of observations.	Spring	2	3	16	7	8	7	34	11	...	S. 75 46 W.	.198		
	Summer	1	31	17	113	29	37	25	29	...	S. 27 14 E.	.293		
	Autumn	2	46	0	86	1	90	0	64	...	S. 18 48 W.	.136		
	Winter	0	16	0	13	0	36	0	26	...	S. 78 1 W.	.209		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 32 32 W.	.143		
No. of miles.	Spring	37	36	133	77	168	94	342	113	...	S. 65 56 W.	.218	S. 66 W.	.04
	Summer	4	108	115	415	253	318	194	206	...	S. 8 56 W.	.278	S. 30½ E.	.24
	Autumn	14	278	0	319	2	469	0	582	...	N. 78 55 W.	.160	N. 1 W	.10
	Winter	0	44	0	50	0	134	0	163	...	N. 83 32 W.	.295	N. 50 W.	.16
	The year[3]	...	...	...	...	...	...	...	...	...	S. 61 16 W.	.180		
M'n vel. in miles p.h'r.	Spring	18.50	12.00	8.31	11.00	21.00	13.43	10.06	10.27					
	Summer	4.00	3.48	6.76	3.67	8.72	8.59	7.76	7.10					
	Autumn	7.00	6.04	0	3.71	2.00	5.21	0	9.09					
	Winter	0	2.75	0	3.85	0	3.72	0	6.27					
83. Jefferson Barracks.	January	247	215	155	402	425	178	157	447					
	February	198	155	133	380	312	252	175	420					
	March	197	191	239	418	374	197	262	465					
	April	126	240	227	384	361	188	227	331					
	May	165	189	278	448	386	257	315	281					
	June	119	122	233	511	481	352	337	223					
	July	165	251	164	430	488	382	277	240					
	August	125	239	212	425	384	241	274	286					
	September	159	240	161	498	294	238	321	323					
	October	144	181	138	431	273	272	416	412					
	November	189	168	205	314	306	245	347	447					
	December	291	182	191	368	292	202	241	455					
	Spring	488	620	744	1250	1121	642	804	1077	...	S. 3 28 E.	.11½		
	Summer	409	612	609	1366	1353	975	888	749	...	S. 3 28 W.	.23½		
	Autumn	492	589	504	1243	873	755	1084	1182	...	S. 50 23 W.	.12½		
	Winter	736	552	479	1150	1029	632	573	1322	...	S. 50 3 W.	.05½		
	The year	2125	2373	2336	5009	4376	3004	3349	4330	...	S. 17 8 W.	.12		

[1] Observed at Bolivar, Cassville, Greenfield, Hermitage, Springfield, Stockton, Toronto, Waynesville and Wet-au-Glaize.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	11.24	5.72	5.76	4.30	6.75
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.22	1.68	.78	.90	.97
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.45	1.59	.92	1.27	.61
Excess of the latter over the former	+.23	—.09	+.14	+.37	—.36

[3] Computed from the resultants for the seasons.

(Nos. 84 to 87.) **Missouri.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from th Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
84. St. Louis Arsenal.		January	198	130	134	140	208	168	291	224					
		February	220	127	135	144	143	109	295	201					
		March	232	138	169	141	213	143	259	210					
		April	196	141	185	165	201	183	257	126					
		May	145	134	199	233	235	180	237	155					
		June	122	150	189	156	283	221	257	128					
		July	196	143	213	154	269	219	180	126					
		August	169	141	231	184	216	182	232	118					
		September	217	140	199	139	249	184	209	113					
		October	234	105	160	143	244	190	249	173					
		November	221	128	161	133	224	186	289	193					
		December	308	115	128	90	198	164	305	189					
		Spring	573	413	553	539	649	506	753	491	...	S. 52° 15′ W.	.06		
		Summer	487	434	633	494	768	622	669	372	...	S. 9 23 W.	.11½		
		Autumn	672	373	520	415	717	560	747	479	...	S. 71 56 W.	.09½		
		Winter	726	372	397	374	549	441	891	614	...	N. 67 19 W.	.18		
		The year	2458	1592	2103	1822	2683	2129	3060	1956	...	S. 70 24 W.	.08½		
85. St. Louis.		Spring	1098	1070	1329	1848	1805	1220	1708	1675	...	S. 21 19 W.	.08½		
		Summer	944	1095	1288	1933	2175	1652	1645	1180	...	S. 6 17 W.	.18		
		Autumn	1198	993	1072	1703	1645	1398	1992	1757	...	S. 60 49 W.	.12		
		Winter	1493	965	917	1604	1619	1167	1686	2037	...	N. 88 15 W.	.11		
		The year	4733	4123	4606	7088	7244	5437	7031	6649	...	S. 50 54 W.	.84		
86. Surface winds at St. Louis in the years 1854, '55, '56 & '57.[1]	No. of observations.	Spring	37	37	32	59	35	72	151	107	...	N. 86 24 W.	.336		
		Summer	48	49	46	73	54	55	88	59	...	S. 61 0 W.	.088		
		Autumn	34	31	48	45	55	83	161	96	...	S. 83 20 W.	.338		
		Winter	31	41	41	80	41	94	222	101	...	S. 82 2 W.	.361		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 84 17 W.	.278		
	No. of miles.	Spring	627	638	492	843	317	1673	3596	1979	...	N. 85 18 W.	.458	N. 85° W.	.03
		Summer	707	440	282	577	468	608	1352	689	...	N. 81 4 W.	.402	N. 51 E.	.04
		Autumn	517	341	446	408	437	1026	2543	1272	...	N. 86 18 W.	.458	S. 82 W.	.03
		Winter	462	620	518	764	363	1471	4412	1614	...	N. 88 54 W.	.413	S. 42 E.	.03
		The year[3]	...	...	...	...	...	...	...	...	...	N. 86 11 W.	.429		
	M'n vel. in miles p.h'r.	Spring	16.95	17.24	15.37	14.29	9.06	23.24	23.81	18.50					
		Summer	14.73	8.98	6.13	7.90	8.67	11.05	15.36	11.68					
		Autumn	15.21	11.00	9.29	9.07	7.95	12.36	15.80	13.25					
		Winter	14.90	15.12	12.33	9.55	8.85	15.65	19.87	15.98					
87. Eastern Missouri.[2]	Surface winds.	Spring	2168½	2346	2455	3520½	3469	2688½	3498[2]	3393	582	S. 36 12 W.	.08		
		Summer	1901	2626	2590	3753	3967	3539	2835	2258	848	S. 2 32 E.	.15½		
		Autumn	2168	2008	1990	3308	3074	2923	3409	3357	666	S. 54 10 W.	.11		
		Winter	2415½	2011	1674	3223	3073	2689	3449[2]	3944	437	S. 77 13 W.	.12½		
		The year	8653	8991	8709	13804½	13583	11839½	13192	12952	2533	S. 38 0 W.	.10		
	Motion of clouds.	Spring	259[2]	168	139[2]	160[2]	398[2]	952	1559	792	...	S. 84 11 W.	.55	S. 35 W.	.04
		Summer	307	201	171	156	298	729	1248	677	...	N. 89 52 W.	.48	N. 63½ E.	.04
		Autumn	181	130	104	100	215	590	881	460	...	S. 85 35 W.	.51	S. 24 E.	.02
		Winter	167	109[2]	95	111	204	434	896[2]	545	...	N. 88 20 W.	.53½	N. 27 W.	.04
		The year[3]	...	...	...	...	...	...	...	...	...	S. 87 51 W.	.52		
	2 preceding combined.	Spring	2428	2514	2594[2]	3681	3867[2]	3640[2]	5057[2]	4185	582	S. 62 32 W.	.14	N. 27½ W.	.01
		Summer	2208	2827	2761	3909	4265	4268	4083	2935	848	S. 23 42 W.	.15	S. 43 E.	.09
		Autumn	2349	2138	2094	3408	3289	3513	4290	3817	666	S. 64 52 W.	.15	N. 57 W.	.02
		Winter	2582[2]	2120[2]	1769	3334	3277	3123	4346	4489	437	S. 81 52 W.	.16	N. 39 W.	.06
		The year[3]	...	...	...	...	...	...	...	...	...	S. 59 17 W.	.14		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	19.17	10.85	12.64	7.09	14.59
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	6.44	.95	4,27	2.14	4.06
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	8.78	2.72	5.78	2.93	6.27
Excess of the latter over the former	+2.34	+1.77	+1.51	+.79	+2.21

[2] Observed at Allenton, Augusta, Boonville, Dundee, Emerson, Hannibal, Hematite, Hermann, Jefferson Barracks, Laborville, Palmyra, Paris, Rhineland, St. Louis, St. Louis Arsenal, Union and Warrenton.

[3] Computed from the resultants for the seasons.

(Nos. 88 and 89.) **Missouri.**—*Continued.*

Kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
		Relative Prevalence of Winds from the Different Points of the Compass.												
88. Surface winds at Cape Girardeau, in the years 1856 and 1857.[1] No. of observ'ns.	Spring	42	29	6	54	60	50	24	97	...	S. 87° 47′ W.	.172	N. 67° W.	.10
	Summer	27	36	20	56	51	67	12	66	...	S. 28 23 W.	.121	S. 19 E.	.06
	Autumn	69	63	19	96	87	78	31	106	...	S. 54 2 W.	.062	N. 76 E.	.03
	Winter	55	58	5	81	80	46	29	85	...	S. 53 17 W.	.047	N. 69 E.	.05
	The year[3]	...	...	...	...	...	...	...	...	...	S. 60 48 W.	.091		
No. of miles.	Spring	270	116	18	189	345	274	117	915	...	N. 65 43 W.	.349		
	Summer	120	163	46	160	307	362	42	359	...	S. 56 1 W.	.198		
	Autumn	377	231	46	534	509	392	133	701	...	S. 68 10 W.	.109		
	Winter	299	246	12	357	370	186	129	514	...	N. 66 3 W.	.089		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 68 23 W.	.187		
Mean vel. in miles per hour.	Spring	6.43	4.00	3.00	3.50	5.75	5.48	4.87	9.43					
	Summer	4.44	4.53	2.30	2.86	6.02	5.40	3.50	5.44					
	Autumn	5.46	3.67	2.42	5.56	5.85	5.03	4.29	6.61					
	Winter	5.44	4.24	2.40	4.41	6.42	4.04	4.45	6.05					
89. Southeastern Missouri.[2] Surface wind.	Spring	172	76	36	115	257	101	135	219	49	S. 81 17 W.	.16½		
	Summer	145	118	56	156	357	224	141	230	91	S. 42 8 W.	.21		
	Autumn	354	102	60	202	358	247	113	304	115	S. 81 24 W.	.12½		
	Winter	237	123	28	147	239	152	118	210	101	N. 81 55 W.	.12		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 71 17 W.	.14		
Motion of clouds.	Spring	52	23	12	19	57	112	150	123	...	N. 88 50 W.	.50	N. 38 W.	.11
	Summer	38	49	23	33	60	154	131	99	...	S. 77 47 W.	.40	S. 77 E.	.04
	Autumn	69	28	21	31	91	176	150	93	...	S. 73 23 W.	.44	S. 9 E.	.06
	Winter	67	23	10	45	102	149	129	122	...	S. 75 8 W.	.42	S. 32 E.	.04
	The year[3]	...	...	...	...	...	...	...	...	...	S. 79 31 W.	.43½		
2 preceding combined.	Spring	224	99	48	134	314	213	285	342	49	S. 88 20 W.	.27	N. 39 W.	.06
	Summer	183	167	79	189	417	378	272	329	91	S. 57 13 W.	.25	S. 14½ E.	.08
	Autumn	423	130	81	233	449	423	263	397	115	S. 76 56 W.	.24½	N. 72½ W.	.01
	Winter	304	146	38	192	341	301	247	332	101	S. 83 30 W.	.21	N. 36½ E.	.04
	The year[3]	...	...	...	...	...	...	...	...	...	S. 76 30 W.	.24		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.20	4.65	5.32	4.81	5.24
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.07	.56	.33	.23	.48
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.16	.92	.58	.43	.98
Excess of the latter over the former	+1.09	+.36	+.25	+.20	+.50

[2] Observed at Benton, Cape Girardeau, Farmington, Greenville, Hornersville and Rolla.
[3] Computed from the resultants for the seasons.

(Nos. 90 and 91.) **Southwestern Illinois.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Athens,	Joel Hall,	4	10	1854 to 1858 inclusive.
Belleville,	N. T. Baker & John J. Patrick,	2	2	1860, 1861 and 1862.
Brighton,	William V. Eldridge,	2	10	1856, 1857, 1858 and 1859.
Centralia,	H. A. Schauber,	0	3	1864 and 1865.
Dongola,	Ralph E. Meeker,	0	10	1861 and 1862.
Dubois,	William C. Spencer,	4	8	1865 to 1869 inclusive.
Highland,	A. F. Bandelier, Jr.,	3	0	1861 to 1864 inclusive.
Holt's Prairie,	....	0	3	1849.

(Nos. 90 and 91.) **Southwestern Illinois.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Jacksonville,	Rev. Z. K. Hawley & others,[1]	2	11	1835 and 1858 to 1862 inclusive, except 1860.
Jerseyville,	....	0	1	1860.
Lebanon,	Prof. N. E. Cobleigh,	2	3	1859 to 1862 inclusive.
Loammi,	Timothy Dudley,	2	9	1866 to 1869 inclusive.
Manchester,	John Grant and others,[2]	13	7	1854 to 1869 inclusive, except 1859.
Murraysville,	....	0	9	1865.
Pana,	Thomas Finley,	0	7	1869.
Piasa Farms,	William V. Eldridge,	2	10	1856, 1857, 1858 and 1859.
Quincy,	Rev. G. B. Giddings,	0	4	1850.
South Pass,	Frank Baker and others,[3]	2	5	1857, 1858 and 1866 to 1869 inclusive.
Springfield,	Geo. W. Brinkerhoff,	5	0	1865 to 1869 inclusive.
Upper Alton,	P. P. Brown and others,[1]	4	11	1843, 1854 to 1857 inclusive, 1861, 1863 & 1864.
Waterloo,	H. Kunster,	2	7	1865 to 1869 inclusive.
Waverly,	Timothy Dudley,	3	6	1862 to 1865 inclusive.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
90. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[4] No. of observations.	Spring	140	345	94	337	270	420	309	536	...	S. 84° 5′ W.	.167	N. 52° E.	.09
	Summer	162	244	49	309	376	703	331	480	...	S. 60 8 W.	.313	S. 22 W.	.09
	Autumn	176	264	82	371	412	597	350	539	...	S. 60 27 W.	.254	S. 11½ E.	.05
	Winter	206	226	88	313	276	462	441	690	...	N. 87 50 W.	.287	N. 32 W.	.09
	The year[5]	...	...	...	...	...	...	...	...	...	S. 73 4 W.	.247		
No. of miles.	Spring	807	1932	439	1536	1632	2937	2233	3255	...	S. 85 5 W.	.250	N. 37½ E.	.08
	Summer	614	944	163	1002	2046	3738	1625	2101	...	S. 58 2 W.	.404	S. 20 W.	.14
	Autumn	884	1049	230	1460	2527	3035	2226	3355	...	S. 70 12 W.	.339	S. 31 W.	.04
	Winter	1511	1101	573	1639	2231	2468	2545	4393	...	N. 86 57 W.	.294	N. 4 E.	.10
	The year[5]	...	...	...	...	...	...	...	...	...	S. 76 5 W.	.308		
Mean vel. in miles per hour.	Spring	5.76	5.60	4.67	4.56	6.04	6.99	7.23	6.07					
	Summer	3.79	3.87	3.33	3.24	5.44	5.32	4.91	4.38					
	Autumn	5.02	3.97	2.80	3.94	6.13	5.08	6.36	6.22					
	Winter	7.33	4.87	6.51	5.24	8.08	5.34	5.77	6.37					
91. Aggregate number of observations at all stations. Surface wind.	Spring	1232	1643	826	1832	1843	2176	1811	2990	405	S. 85 34 W.	.15		
	Summer	1285	1679	639	2107	2447	3541	1496	2153	839	S. 42 2 W.	.20		
	Autumn	1088	1247	541	1989	2222	2763	1830	2818	669	S. 61 12 W.	.20½		
	Winter	1152	1183	625	1986	2028	2384	2556	3357	459	S. 78 36 W.	.24		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 65 40 W.	.19		
Motion of clouds.	Spring	534	495	356	535	659	1370	1794	1541	...	S. 89 11 W.	.38	N. 1 W.	.04
	Summer	654	573	345	583	929	1817	1901	1520	...	S. 80 59 W.	.37½	S. 29 E.	.02
	Autumn	491	402	262	502	795	1372	1610	1325	...	S. 81 8 W.	.39	S. 21 W.	.02
	Winter	457	370	322	532	692	1055	1784	1143	...	S. 83 7 W.	.37½	S. 44 E.	.01
	The year[5]	...	...	...	...	...	...	...	...	...	S. 83 38 W.	.38		
2 preceding combined.	Spring	1766	2138	1182	2367	2502	3546	3605	4531	405	S. 87 40 W.	.22½	N. 18 E.	.06
	Summer	1939	2252	984	2690	3376	5358	3397	3673	839	S. 61 1 W.	.25	S. 27 E.	.06
	Autumn	1579	1649	803	2491	3017	4135	3440	4143	669	S. 69 59 W.	.27	S. 22 W.	.03
	Winter	1609	1553	947	2518	2720	3439	4340	4500	459	S. 80 20 W.	.28	N. 55 W.	.04
	The year[5]	...	...	...	...	...	...	...	...	...	S. 74 35 W.	.25		

[1] Prof. William Coffin and Timothy Dudley. [2] Miss Ellen Grant and C. W. Grant.
[3] S. C. Spaulding and H. C. Freeman.
[4] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.03	4.58	5.27	6.09	5.49
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.01	1.43	1.34	1.75	1.36
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.51	1.85	1.79	1.79	1.69
Excess of the latter over the former	+.50	+.42	+.45	+.04	+.33

[5] Computed from the resultants for the seasons.

(Nos. 92 and 93.) **Southeastern Illinois.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Albion,	Edgar P. Thompson,	0	2	1857.
Brockville,	....	0	6	1862.
Decatur,	Timothy Dudley,	0	3	1869.
Effingham,	W. Thompson,	0	4	1869.
Golconda,	Rev. Wm. V. Eldridge,	4	0	1866 to 1869 inclusive.
Hazel Dell,	Henry Griffing,	2	6	1863, 1864 and 1865.
Hoylton,	J. Ellsworth and O. J. Marsh,	1	2	1864, 1865 and 1866.
Louisville,	D. H. Chase,	0	11	1869.
Mattoon,	W. E. Henry,	0	5	1869.
Olney,	Rev. H. A. Brickenstein,	0	3	1860.
Paris,	C. Leving,	0	2	1868.
Ridge Farm,	B. C. Williams,	0	7	1868.
Shawneetown,	Mr. Roe,	0	2	1843.
West Salem,	Henry A. Titze,	4	8	1856 to 1860 inclusive.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
92. Surface winds at West Salem in the years 1856 & 1857.[1]	No. of observations.	Spring	72	45	38	43	95	50	46	139	...	N. 62° 30′ W.	.145	N. 6° W.	.17
		Summer	37	31	20	28	125	47	30	35	...	S. 15 33 W.	.177	S. 46 E.	.09
		Autumn	24	26	13	44	104	62	62	48	...	S. 36 59 W.	.240	S. 23 W.	.09
		Winter	27	24	17	41	90	35	47	59	...	S. 41 35 W.	.182	S. 16 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 45 37 W.	.155		
	No. of miles.	Spring	627	258	147	360	936	524	527	1568	...	N. 75 54 W.	.253	N. $7\frac{1}{2}$ W.	.23
		Summer	229	86	36	112	840	465	263	184	...	S. 33 24 W.	.287	S. 36 E.	.09
		Autumn	115	159	51	322	751	872	584	563	...	S. 51 14 W.	.325	S. 47 W.	.05
		Winter	107	88	68	241	1006	357	408	436	...	S. 35 5 W.	.341	S. 9 E.	.12
		The year[2]	...	...	...	...	...	...	...	...	...	S. 55 5 W.	.267		
	M'n vel. in miles p.h'r.	Spring	8.71	5.73	3.87	8.37	9.85	10.48	11.46	11.28					
		Summer	6.19	2.77	1.80	4.00	6.72	9.89	8.77	5.26					
		Autumn	4.79	6.12	3.92	7.32	7.22	14.06	9.42	11.73					
		Winter	3.96	3.67	4.00	5.88	11.18	10.20	8.68	7.39					
93. Aggregate number of observations at all stations.	Surface winds.	Spring	404	389	260	381	600	672	599	714	339	S. 78 17 W.	.18		
		Summer	303	362	222	452	772	1015	620	404	648	S. 40 29 W.	$.26\frac{1}{2}$		
		Autumn	377	259	178	455	727	759	683	695	369	S. 62 34 W.	.26		
		Winter	226	200	120	301	439	457	574	657	258	S. 80 51 W.	.28		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 64 51 W.	$.23\frac{1}{2}$		
	Motion of clouds.	Spring	63	31	37	30	134	390	938	194	...	S. 80 40 W.	.71	West	.06
		Summer	131	72	56	87	226	359	1031	237	...	S. 81 30 W.	.59	N. 59 E.	.07
		Autumn	84	39	44	77	141	359	920	172	...	S. 79 32 W.	.65	N. $79\frac{1}{2}$ E.	$.00\frac{1}{2}$
		Winter	45	25	20	48	56	292	536	88	...	S. 76 49 W.	.68	S. 18 W.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 79 35 W.	$.65\frac{1}{2}$		
	2 preceding combined.	Spring	467	420	297	411	734	1062	1537	908	339	S. 79 46 W.	$.33\frac{1}{2}$	N. 14 E.	$.04\frac{1}{2}$
		Summer	434	434	278	539	998	1374	1651	641	648	S. 61 16 W.	$.34\frac{1}{2}$	S. 26 E.	.07
		Autumn	461	298	222	532	868	1118	1603	867	369	S. 71 10 W.	$.36\frac{1}{2}$	S. 31 W.	.02
		Winter	271	225	140	349	495	749	1110	745	258	S. 79 1 W.	.38	N. 53 W.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 72 57 W.	$.35\frac{1}{2}$		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.37	6.27	8.92	7.97	8.13
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.36	1.11	2.14	1.45	1.26
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.37	1.80	2.90	2.72	2.17
Excess of the latter over the former	+1.01	+.69	+.76	+1.27	+.91

[2] Computed from the resultants for the seasons.

(Nos. 94 and 95.) **Western Tennessee.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Dover,	B. F. Tavel,	0	5	1850.
Friendship,	Dr. Robert T. Carter,	0	5	1855.
La Grange,	J. R. Blake,	0	4	1859.
Memphis,	R. Harris and others,[1]	4	7	1854, 1859 to 1861, and 1867 to 1869, all inclusive.
Mount Atlas,	Mr. Travis,	0	7	1843, 1844 and 1845.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
94. Surface winds at Smithsonian Stations in the years 1854 and 1855.[2]	No. of observations.	Spring	22	49	14	103	17	159	42	103	...	S. 55° 28′ W.	.235	S. 83½° W.	.04
		Summer	17	45	10	40	7	183	49	65	...	S. 65 37 W.	.371	S. 83 W.	.18
		Autumn	4	23	17	30	1	43	1	31	...	S. 6 18 E.	.063	N. 67 E.	.18
		Winter	2	20	6	39	9	47	11	32	...	S. 31 40 W.	.206	S. 50 E.	.07
		The year[3]	...	...	...	...	...	...	...	...	...	S. 50 58 W.	.208		
	No. of miles.	Spring	120	182	36	418	42	1002	266	646	...	S. 27 40 W.	.353		
		Summer	52	154	34	125	16	522	116	281	...	S. 75 52 W.	.327		
		Autumn	20	62	38	78	2	130	2	98	...	S. 58 42 W.	.355		
		Winter	14	66	12	187	75	377	90	344	...	S. 67 26 W.	.356		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 69 47 W.	.304		
	Mean vel. in miles per hour.	Spring	5.45	3.71	2.57	4.06	2.47	6.30	6.33	6.27					
		Summer	3.06	3.42	3.40	3.12	2.29	2.85	2.37	4.32					
		Autumn	5.00	7.20	2.24	2.60	2.00	3.02	2.00	3.16					
		Winter	7.00	3.30	2.00	4.79	8.33	8.02	8.18	10.75					
95. Aggregate number of observations at all stations.	Surface winds.	Spring	126	177	66	310	231	459	130	316	201	S. 41 43 W.	.20		
		Summer	74	149	72	152	108	394	122	192	211	S. 54 35 W.	.21		
		Autumn	127	203	70	169	98	196	63	212	92	N. 16 1 W.	.05½		
		Winter	107	179	89	241	202	268	129	273	115	S. 42 52 W.	.11½		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 52 44 W.	.12½		
	Motion of clouds.	Spring	16	28	9	65	30	219	136	93	...	S. 65 22 W.	.52	S. 71 W.	.06
		Summer	15	40	16	25	21	125	79	73	...	S. 78 26 W.	.41	N. 8 E.	.11
		Autumn	3	10	14	30	9	53	32	25	...	S. 48 21 W.	.34	S. 79 E.	.17
		Winter	7	11	4	25	12	108	87	26	...	S. 64 25 W.	.60	S. 62½ W.	.14
		The year[3]	...	...	...	...	...	...	...	...	...	S. 64 49 W.	.46		
	2 preceding combined.	Spring	142	205	75	375	261	678	266	409	201	S. 51 59 W.	.27	S. 37½ W.	.09
		Summer	89	189	88	177	129	519	201	265	211	S. 62 40 W.	.24½	S. 73 W.	.06
		Autumn	130	213	84	199	107	249	95	237	92	N. 68 55 W.	.05	N. 45 E.	.15
		Winter	114	190	93	266	214	376	216	299	115	S. 53 10 W.	.18½	S. 39 E.	.02
		The year[3]	...	...	...	...	...	...	...	...	...	S. 59 11 W.	.18		

[1] W. J. Tuck, M.D., Dr. Daniel F. Wright, R. W. Mitchell, M.D., and Edward Goldsmith.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.33	3.12	2.87	7.02	4.58
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.25	1.16	1.16	1.45	.95
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.88	1.02	1.02	2.50	1.39
Excess of the latter over the former	+.63	—.14	—.14	+1.05	+.44

[3] Computed from the resultants for the seasons.

(Nos. 96 and 97.) **Western Kentucky.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bowling Green,	J. E. Younglove & F. C. Herrick,	2	2	1852 and 1855 to 1859 inclusive.
Clinton,	Rev. T. H. Cleland,	1	2	1868 and 1869.
Hardensburg,	Mrs. Mary A. Walker and J. C. Barbage,	2	4	1859, 1860 and 1861.
New Concord,	Mr. Williams,	0	1	June, 1845.
Paducah,	Andrew Mattison,	3	1	1859 to 1862 inclusive.

Kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
96. Surface winds at Bowling Green in the autumn of 1855.[1] No. of obser-vat'ns.	....	9	3	9	7	29	32	21	6	...	S. 37° 39′ W.	.289		
No. of miles.	....	34	8	34	20	190	178	70	62	...	S. 37 1 W.	.333		
Mean velocity.	....	3.78	2.67	3.78	2.86	6.55	5.56	3.33	10.33					
97. Aggregate number of observations at all stations. Surface winds.	Spring	153	163	107	84	287	361	218	291	81	S. 72 12 W.	.24		
	Summer	109	148	53	130	180	444	119	247	201	S. 61 6 W.	.25		
	Autumn	157	131	79	121	269	343	129	246	144	S. 58 58 W.	.21		
	Winter	198	104	106	123	256	405	167	314	121	S. 72 10 W.	.24		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 9 W.	.23		
Motion of clouds.	Spring	31	22	9	23	28	180	93	86	...	S. 75 43 W.	.52½	S. 24° W.	.02½
	Summer	13	11	6	4	5	58	58	43	...	N. 88 49 W.	.57	N. 31 W.	.13
	Autumn	18	36	7	48	50	121	108	80	...	S. 69 17 W.	.42	S. 68 E.	.11
	Winter	2	21	5	24	14	147	61	89	...	S. 73 54 W.	.55	S. 31 W.	.06
	The year[2]	...	...	...	...	...	...	...	...	...	S. 78 12 W.	.51		
2 preceding combined.	Spring	184	185	116	107	315	541	311	377	81	S. 73 16 W.	.30	N. 65 W.	.03
	Summer	122	159	59	134	185	502	177	290	201	S. 67 29 W.	.28	S. 21 E.	.01
	Autumn	175	167	86	169	319	464	237	326	144	S. 62 45 W.	.25½	S. 65 E.	.04
	Winter	200	125	111	147	270	552	228	403	121	S. 72 21 W.	.29	N. 43 W.	.02
	The year[2]	...	...	...	...	...	...	...	...	...	S. 69 8 W.	.28		

Relative Prevalence of Winds from the Different Points of the Compass.

[1] From this table we obtain the following summary of results :—

	Autumn.
Average velocity of all winds in miles per hour	5.14
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.49
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.71
Excess of the latter over the former	+.22

[2] Computed from the resultants for the seasons.

(Nos. 98 and 99.) **Southwestern Indiana.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bloomingdale,	Wm. H. & Miss M. A. Hobbs,	0	9	1864 and 1865.
Bloomington,	Prof. C. M. Dodd & others,[1]	1	9	1868 and 1869.
Cannelton,	Hamilton Smith, Jr.,	3	1	1857 to 1861 inclusive.
Evansville,	John F. Crisp,	1	7	1857 and 1858.
Greencastle,	Mr. Downey and others,[2]	3	2	1843, 1849, 1851, 1854 and 1859 to 1862 inclusive.
Harveysburg,	Mrs. Dr. B. C. Williams,	0	10	1869.
Merom,	Thomas Holmes,	3	1	1866 to 1869 inclusive.
New Harmony,	John Chappelsmith,	16	0	1854 to 1869 inclusive.
Patoka,	A. P. Turner,	0	2	1859.
Rockville,	H. H. Anderson and J. W. Tenbrock,	1	9	1859 to 1861 inclusive, 1863 and 1864.

[1] T. H. Mallow and others. [2] Prof. Joseph Tingley and Wm. H. Larrabee.

(Nos. 98 and 99.) **Southwestern Indiana.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
98. Surface winds at Smithsonian Stations in the year 1854, 1855, 1856 and 1857.[1]	No. of observations.	Spring	99	24	45	51	92	72	117	193	...	N. 70° 24′ W.	.315		
		Summer	50	9	13	40	66	139	59	97	...	S. 69 13 W.	.402		
		Autumn	33	25	18	56	85	82	74	78	...	S. 55 33 W.	.301		
		Winter	32	17	28	62	85	53	49	98	...	S. 53 37 W.	.208		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 73 4 W.	.247		
	No. of miles.	Spring	537	139	188	406	639	654	749	1720	...	N. 75 59 W.	.316		
		Summer	310	28	30	112	368	975	508	434	...	S. 70 1 W.	.372		
		Autumn	179	70	81	245	389	354	351	399	...	S. 62 29 W.	.379		
		Winter	151	42	127	247	457	521	415	561	...	S. 63 32 W.	.528		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 76 5 W.	.308		
	Mean vel. in miles per hour.	Spring	5.42	5.79	4.18	7.96	6.95	9.08	6.40	8.91					
		Summer	6.20	3.11	2.31	2.80	5.58	7.01	8.61	4.47					
		Autumn	5.42	2.80	4.50	4.37	4.58	4.32	4.74	5.12					
		Winter	4.72	2.47	4.54	3.98	5.38	9.83	8.47	5.72					
99. Aggregate number of observations at all stations.	Surface winds.	Spring	723	557	479	988	1223	1044	968	1639	135	S. 73 28 W.	.17½		
		Summer	651	432	449	807	1150	1347	1009	1103	362	S. 56 31 W.	.23½		
		Autumn	583	391	339	977	1193	1071	865	1358	223	S. 57 14 W.	.21½		
		Winter	545	354	421	973	1148	1218	1142	1635	255	S. 67 29 W.	.25½		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 63 17 W.	.22		
	Motion of clouds.	Spring	144	52	49	57	145	451	605	371	...	S. 86 42 W.	.57		
		Summer	151	70	76	60	141	378	576	252	...	S. 85 11 W.	.50		
		Autumn	117	63	34	65	143	329	443	270	...	S. 84 41 W.	.51		
		Winter	51	24	24	53	114	301	347	171	...	S. 73 46 W.	.58		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 82 24 W.	.53½		
	2 preceding combined.	Spring	867	609	528	1045	1368	1495	1573	2010	135	S. 79 18 W.	.25	N. 10° E.	.03
		Summer	802	502	525	867	1291	1725	1585	1355	362	S. 66 1 W.	.27½	S. 28 E.	.01
		Autumn	700	454	373	1042	1336	1400	1308	1628	223	S. 66 12 W.	.26	S. 49 E.	.03½
		Winter	596	378	445	1026	1262	1519	1489	1806	255	S. 66 58 W.	.30	N. 47 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 69 25 W.	.27		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.59	5.95	7.26	5.85	5.49
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.38	1.24	2.29	2.35	1.36
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.45	2.21	2.75	3.09	1.69
Excess of the latter over the former	+.07	+.97	+.46	+.74	+.33

[2] Computed from the resultants for the seasons.

(Nos. 100 and 101.) **Southeastern Indiana.**

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alnoma,	....	0	11	1849 and 1850.
Aurora,	George Sutton, M.D.,	5	0	1859 and 1866 to 1869 inclusive.
Brookville,	Mr. Hayward,	0	4	1843.
Cadiz,	William Dawson,	2	8	1860 to 1863 inclusive.
Carthage,	Charles M. Hobbs,	0	4	1868.
Green Mound,	....	2	2	1860, 1861 and 1862.
Greensburg,	Mr. Lathrop,	0	3	1843.
Indianapolis,	J. Wheeler and others,[1]	3	6	1843, 1864, 1865, 1867, 1868 and 1869.
Knightstown,	D. Deem,	1	2	1868 and 1869.
Madison,	C. Barnes and others,[2]	1	10	1858, 1864, 1865 and 1866.

[1] Royal Mayhew, W. W. Butterfield, Mrs. Butterfield and W. J. Elstun.
[2] Rev. Samuel Collins and Oliver Mulvey.

(Nos. 100 and 101.) **Southeastern Indiana.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Milton,	Dr. V. Kersey,	2	0	1854 and 1855.
Mount Carmel,	J. A. Applegate & daughter,	0	7	1869.
New Albany,	C. Barnes and others,[1]	4	3	1856, 1857, 1859, 1863, 1864, 1865, 1867 & 1869.
Newcastle,	Prof. Jos. Tingley and Thos. B. Redding.	2	1	1863, 1864 and 1865.
Newport,	Daniel H. Roberts,	0	1	1853.
Richmond,	W. W. Austin and others,[2]	10	6	1854 to 1868 inclusive, except 1855 and 1864
Shelbyville,	J. T. Bullock,	3	3	1859 to 1862 inclusive.
Spiceland,	William Dawson,	6	8	1863 to 1869 inclusive.
Vevay,	Charles G. Boerner,	5	3	1864 to 1869 inclusive.
Walnut Hills,	W. W. Austin,	0	5	1849 and 1850.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
100. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[3]	No. of observations.	Spring	89	187	42	145	68	334	194	217	...	S. 84° 2′ W.	.189	N. 3½° W.	.03
		Summer	36	131	19	62	41	267	123	128	...	S. 77 33 W.	.189	N. 4 E.	.01
		Autumn	61	114	25	88	69	209	119	132	...	S. 77 5 W.	.161	N. 62 E.	.03
		Winter	52	72	35	83	67	230	157	100	...	S. 64 59 W.	.252	S. 35 W.	.07
		The year[4]	...	...	...	...	...	...	...	...	...	S. 75 0 W.	.196		
	No. of miles.	Spring	864	930	160	639	322	2256	1720	1667	...	S. 84 8 W.	.297	N. 68 W.	.02
		Summer	214	441	47	195	211	1259	667	725	...	S. 82 44 W.	.253	N. 83 E.	.03
		Autumn	274	597	76	284	355.5	1053	767.5	848	...	S. 89 47 W.	.205	N. 62 E.	.08
		Winter	280	293	131	335	292	1503	1188	781	...	S. 76 5 W.	.353	S. 52 W.	.08
		The year[4]	...	...	..	...	...	...	...	...	...	S. 85 47 W.	.280		
	M'n vel. in miles p. h'r.	Spring	9.71	4.97	3.81	4.41	4.74	6.75	8.87	7.68					
		Summer	5.94	3.37	2.47	3.15	5.15	4.72	5.42	5.66					
		Autumn	4.49	5.24	3.04	3.23	5.15	5.04	6.4	6.42					
		Winter	5.38	4.07	3.17	4.04	4.36	6.53	7.57	7.81					
101. Aggregate number of observations at all stations.	Surface winds.	Spring	758	1792	785	1098	999	2911	1689	2296	1067	S. 85 50 W.	.01½		
		Summer	864	1888	678	921	819	3728	1512	1558	1702	S. 72 42 W.	.20		
		Autumn	729	1478	515	1107	1012	3394	1454	2145	1367	S. 73 23 W.	.24		
		Winter	566	1277	631	1184	1006	3245	1960	2297	898	S. 73 25 W.	.28		
		The year	2917	6435	2609	4310	3836	13278	6615	8296	5034	S. 75 51 W.	.22½		
	Motion of clouds.	Spring	199	418	123	216	254	1569	1506	1129	...	S. 85 31 W.	.52½	S. 73½ E.	.04
		Summer	259	356	98	129	135	1386	1527	1025	...	N. 89 24 W.	.57	N. 11 W.	.04
		Autumn	177	246	79	145	202	1390	1251	921	...	S. 83 34 W.	.57½	S. 22 W.	.03
		Winter	125	242	94	177	181	1163	1390	931	...	S. 85 59 W.	.58	S. 70 W.	.02
		The year[4]	...	...	...	...	...	...	...	...	...	S. 87 25 W.	.56		
	The two combined.	Spring	957	2210	908	1314	1253	4480	3195	3425	1067	S. 85 40 W.	.29	N. 32½ E.	.03½
		Summer	1123	2244	776	1050	954	5114	3039	2583	1702	S. 81 47 W.	.29	N. 69 E.	.02
		Autumn	906	1724	594	1252	1214	4784	2705	3066	1367	S. 77 55 W.	.32	S. 17½ W.	.02
		Winter	691	1519	725	1361	1187	4408	3350	3228	898	S. 78 30 W.	.35	S. 63 W.	.04
		The year	3677	7697	3003	4977	4608	18786	12289	12302	5034	S. 80 51 W.	.31		

[1] Drs. Alex. Martin and E. S. Crozier.

[2] Joseph Moore, John Haines, Edward B. Rambo and John Valentine.

[3] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.71	4.66	5.21	6.03	5.65
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.27	.88	.84	1.52	1.11
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.99	1.18	1.07	2.13	1.58
Excess of the latter over the former	+.72	+.30	+.23	+.61	+.47

[4] Computed from the resultants for the seasons.

(Nos. 102 to 104.) **Middle Tennessee.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Austin,	S. K. Jennings & P. B. Calhoun,	1	11	1861, 1868 and 1869.
Chatanooga,	Dr. G. H. Blaker,	0	1	1864.
Clarkesville,	Prof. W. M. Stewart,	16	7	1852, 1854, 1855, 1856 and 1858 to 1869 inclusive.
Fayetteville,	Dr. W. W. McNulty,	1	0	1850.
Franklin,	Joseph M. Parker, M.D.,	0	6	
Glenwood,	....	....		(See Clarkesville.)
Lebanon,	A. P. Stewart & B. C. Jilson,	1	1	1852, 1854 and 1855.
Lookout Mountain,	E. F. Williams & Rev. C. F. P. Bancroft.	3	7	1866 to 1869 inclusive.
Nashville,	Prof. James Hamilton,	6	0	1839 to 1844 inclusive.
University Place,	Charles R. Barney,	1	4	1859, 1860 and 1861.
Winchester,	S. W. Houghton,	0	7	1859.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
102. Nashville.	January	.108	.429	.231	.709	.146	1.212	.844	.241	S. 39° 41′ W.	.30		
	February	.354	.591	.173	.669	.072	1.080	.911	.249	S. 65 22 W.	.22		
	March	.312	.805	.172	.349	.080	1.425	.618	.239	S. 70 35 W.	.21		
	April	.153	.478	.136	.403	.114	1.662	.771	.286	S. 57 38 W.	.41		
	May	.207	.597	.197	.242	.078	1.865	.656	.158	S. 57 29 W.	.38½		
	June	.061	.539	.218	.276	.021	2.343	.477	.065	S. 45 1 W.	.49		
	July	.186	.700	.282	.396	.069	1.704	.430	.105	S. 39 18 W.	.27		
	August	.156	.567	.567	.485	.069	1.612	.449	.097	S. 20 31 W.	.25		
	September	.380	.633	.523	.299	.054	1.711	.309	.091	S. 34 30 W.	.18		
	October	.524	.622	.142	.369	.070	1.331	.836	.196	S. 81 13 W.	.27		
	November	.220	.593	.193	.527	.118	1.150	.753	.340	S. 62 42 W.	.23		
	December	.143	.412	.253	.297	.057	1.676	.622	.395	S. 60 59 W.	.39½		
103. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations	Spring	153	134	48	102	192	145	79	144	S. 76 0 W.	.058	N. 21° E.	.06
	Summer	63	101	37	82	140	207	110	80	S. 43 42 W.	.194	S. 37 W.	.09
	Autumn	83	101	48	132	143	118	64	94	S. 0 40 W.	.091	S. 74 E.	.08
	Winter	151	99	27	144	223	146	81	252	S. 80 3 W.	.133	N. 49 W.	.06
	The year[2]	...	...	...	...	...	...	...	...	S. 50 16 W.	.105		
No. of miles.	Spring	754	650	160	419	1436	1174	477	1322	S. 72 40 W.	.178	N. 14½ E.	.04
	Summer	178	328	94	212	450	716	371	288	S. 50 51 W.	.221	S. 12 E.	.04
	Autumn	298	341	110	489	542	642	266	710	S. 60 12 W.	.127	N. 65 E.	.08
	Winter	494	306	66	894	1983	1293	548	2456	S. 64 39 W.	.281	S. 76 W.	.08
	The year[2]	...	...	...	...	...	...	...	...	S. 63 58 W.	.209		
M'n vel. in miles p.h'r.	Spring	4.93	4.85	3.33	4.11	7.48	8.10	6.04	9.18				
	Summer	2.83	3.25	2.54	2.59	3.21	3.46	3.37	3.60				
	Autumn	3.59	3.38	2.29	3.70	3.79	5.44	4.16	7.55				
	Winter	3.27	3.09	2.44	6.21	8.89	8.86	6.77	9.75				

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour . . .	6.41	3.22	4.34	7.16	5.28
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.37	.62	.39	.95	.55
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	1.14	.71	.55	2.01	1.10
Excess of the latter over the former	+.77	+.09	+.16	+1.06	+.55

[2] Computed from the resultants for the seasons.

(No. 104.) **Middle Tennessee.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
			Relative Prevalence of Winds from the Different Points of the Compass.												
104. Aggregate number of observations at all stations.	Surface wind.	Spring	1270½	2583½	887½	1698	1421½	6050	2534½	1785½	599	S. 59° 36′ W.	.26		
		Summer	873	2516½	1568	1825½	1149	7203½	2037	962½	1243	S. 37 4 W.	.27		
		Autumn	1821	2527½	1326	2053½	1195	5292½	2573½	1740	982	S. 62 31 W.	.17		
		Winter	1322½	2051	984½	2562	1282	5083	3047½	2154½	358	S. 58 36 W.	.24½		
		The year	5287	9678½	4766	8139	5047½	23629	10192½	6642½	3182	S. 52 44 W.	.23	N. 83° W.	.05
	Motion of clouds.	Spring	122	160	25	57	251	849	1436	550	...	S. 83 13 W.	.65	N. 65½ E.	.09
		Summer	174½	319	197	119½	178½	789½	1663	340	...	S. 84 44 W.	.52	S. 29 E.	.02
		Autumn	122	165½	70	117½	213½	771½	1336	417	...	S. 80 50 W.	.60	S. 53 W.	.05
		Winter	138½	109	28	96	257½	883	1355½	501½	...	S. 80 2 W.	.65		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 82 4 W.	.60½		
	2 preceding combined.	Spring	1392½	2743½	912½	1755	1672½	6899	3970½	2335½	599	S. 66 20 W.	.31½	N. 83 W.	.04
		Summer	1047½	2835½	1765	1945½	1327½	7993	3700	1302½	1243	S. 49 29 W.	.29	S. 24 E.	.06½
		Autumn	1943	2693	1396	2171	1408½	6064	3909½	2157	982	S. 69 10 W.	.23	N. 34 E.	.06
		Winter	1461	2160	1012½	2658	1539½	5966	4403	2656	358	S. 65 30 W.	.30	N. 77 W.	.02½
		The year	5844	10432	5086	8529½	5948	26922	15983	8451	3182	S. 62 17 W.	.28		

[1] Computed from the resultants for the seasons.

(Nos. 105 to 107.) **Northern and Central Kentucky.**

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Arcadia,	Shriver Howard and others,	1	9	1840, 1841 and 1869.
Ballardsville,	Dr. John Swain,	3	5	1854, 1855, 1856, 1860 and 1861.
Bardstown,	J. H. Lunemann & T. H. Miles,	2	0	1858 and 1859.
Beech Fork,	Dr. C. D. Case,	0	10	1860.
Chilesburg,	Dr. Samuel D. Martin,	4	9	1865 to 1869 inclusive.
Danville,	O. Beatty and R. H. Caldwell,	10	3	1843, 1854 to 1869 inclusive, except 1860, 1863 and 1864.
Lexington	Rev. S. R. Williams and N. Williams,	0	9	1859 and 1869.
London,	W. S. Doak,	0	9	1865 and 1866.
Louisville,	Rev. S. R. Williams & others,[1]	3	1	1843, 1858, 1861, 1862 and 1869.
Newport,	Prof. M. G. Williams,	0	5	1861.
Newport Barracks,	Post Surgeon,	12	0	1847 to 1859 inclusive.
Nicholasville,	Rev. Jos. McD. Matthews,	2	4	1861, 1862 and 1863.
Nolin,	J. Grinnell,	0	2	1858.
St. Mary's College,	Prof. Thebaud,	0	7	1843 and 1844.
Springdale,	Mrs. L. Young,	14	9	1843 and 1854 to 1869 inclusive, except 1860.
Taylorsville.	H. C. Mathis.	0	4	1866.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
		Relative Prevalence of Winds from the Different Points of the Compass.												
105. Newport Barracks. Surface wind.	January	293	128	84	79	295	297	353	165					
	February	214	98	97	67	238	269	276	180					
	March	216	113	82	47	224	220	212	167					
	April	235	152	145	84	282	173	266	195					
	May	158	166	114	63	326	219	285	95					
	June	167	110	80	51	439	307	322	67					
	July	147	134	60	66	379	326	280	84					
	August	175	199	82	66	346	267	287	54					
	September	271	146	116	63	326	252	278	89					
	October	294	136	98	70	307	238	335	131					
	November	252	113	121	37	314	236	335	183					
	December	244	106	93	59	336	255	351	163					
	Spring	609	431	341	194	832	612	763	457	...	S. 77° 22′ W.	.18		
	Summer	489	443	222	183	1164	900	889	205	...	S. 45 40 W.	.31		
	Autumn	817	395	335	170	947	726	948	403	...	S. 78 51 W.	.22		
	Winter	751	332	274	205	869	821	980	508	...	S. 78 51 W.	.27		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 68 6 W.	.23½		

[1] Messrs. Fleming and Peter.

[2] Computed from the resultants for the seasons.

(Nos. 105 to 107.) **Northern and Central Kentucky.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
105. Newport Barracks.	Motion of clouds.	Spring	62	0	6	0	41	4	47	10	...	N. 63° 37′ W.	.33½	N. 89½° E.	.19
		Summer	9	0	2	0	10	1	27	0	...	S. 86 12 W.	.52½	S. 12½ W.	.15
		Autumn	23	0	2	0	14	1	77	0	...	N. 83 45 W.	.65	S. 74 W.	.16
		Winter	43	1	6	0	12	1	65	8	...	N. 60 27 W.	.54½	N. 5 E.	.16
		The year[3]	...	...	...	...	...	...	...	...	...	N. 76 52 W.	.50		
	The two combined.	Spring	671	431	347	194	873	616	810	467	...	S. 79 56 W.	.18	N. 40½ E.	.07
		Summer	498	443	224	183	1174	901	916	205	...	S. 46 19 W.	.31½	S. 2½ E.	.14
		Autumn	840	395	337	170	961	727	1025	403	...	S. 80 2 W.	.23	N. 7 W.	.04½
		Winter	794	333	280	205	881	822	1045	516	...	S. 80 55 W.	.27½	N. 46½ W.	.06
		The year[3]	...	...	...	...	...	...	...	...	...	S. 69 48 W.	.24		
106. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	285	335	176	151	301	849	476	666	...	S. 89 9 W.	.285	N. 5 E.	.06
		Summer	221	275	124	112	254	815	388	471	...	S. 79 51 W.	.288	N. 32 E.	.02
		Autumn	182	269	184	209	319	836	373	446	...	S. 63 57 W.	.254	S. 56 E.	.07
		Winter	254	180	181	200	406	1049	792	656	...	S. 74 0 W.	.388	S. 65 W.	.09
		The year[3]	...	...	...	...	...	...	...	...	...	S. 76 50 W.	.301		
	No. of miles.	Spring	1422	1556	830	557	2226	5568	3102	4416	...	S. 83 22 W.	.360	N. 11 E.	.06
		Summer	872	1074	552	327	1082	4345	2194	2288	...	S. 77 59 W.	.360	N. 30 E.	.03
		Autumn	786	1168	769	867	1813	4810	2908	2504	...	S. 67 24 W.	.346	S. 60 E.	.06
		Winter	1106	698	651	673	2844	6508	5245	3585	...	S. 70 37 W.	.480	S. 53 W.	.10
		The year[3]	...	...	...	...	...	...	...	...	...	S. 74 37½ W.	.385		
	M'n vel. in miles p.h'r.	Spring	4.99	4.64	4.71	3.69	7.40	6.56	6.52	6.63					
		Summer	3.95	3.91	4.45	2.92	4.26	5.33	5.65	4.86					
		Autumn	4.32	4.34	4.18	4.15	5.68	5.75	7.80	5.61					
		Winter	4.35	3.88	3.60	3.36	7.00	6.20	6.62	5.46					
107. Aggregate number of observations at all stations.[2]	Surface wind.	Spring	716	1337	839	836	1270	2964	1640	1604	1080	S. 65 2 W.	.22½		
		Summer	737	1290	516	719	978	2941	1277	1025	2111	S. 60 56 W.	.21		
		Autumn	804	1156	668	853	1371	2834	1420	1425	1855	S. 60 8 W.	.22		
		Winter	691	900	697	818	1288	3269	2186	1734	992	S. 66 55 W.	.33		
		The year	2948	4683	2720	3226	4907	12008	6523	5788	6038	S. 63 44 W.	.24½		
	Motion of clouds.	Spring	142	162	101	101	206	1376	1160	538	...	S. 74 36 W.	.61	N. 55 W.	.07
		Summer	168	197	79	83	183	1087	1000	387	...	S. 76 20 W.	.57	N. 37 E.	.04
		Autumn	132	147	126	94	184	1303	815	479	...	S. 71 27 W.	.57	S. 74 E.	.04
		Winter	112	112	54	59	192	1373	1138	470	...	S. 73 16 W.	.67½	S. 67 W.	.07
		The year[3]	...	...	...	...	...	...	...	...	...	S. 73 54 W.	.61		
	2 preceding combined.	Spring	858	1499	940	937	1476	4340	2800	2142	1080	S. 69 24 W.	.31½	N. 22½ E.	.02
		Summer	905	1487	595	802	1161	4028	2277	1412	2111	S. 67 29 W.	.29	N. 75 E.	.03½
		Autumn	936	1303	794	947	1555	4137	2235	1904	1855	S. 64 43 W.	.29	S. 89½ E.	.04
		Winter	803	1012	751	877	1480	4642	3324	2204	992	S. 69 14 W.	.40	S. 75 W.	.08
		The year[3]	...	...	...	...	...	...	...	...	...	S. 67 46 W.	.32		

[1] Including Paris and Millersburg.

From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.08	4.79	5.54	5.73	5.53
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.73	1.38	1.41	2.22	1.67
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.19	1.72	1.92	2.75	2.13
Excess of the latter over the former	+.46	+.34	+.51	+.53	+.46

[2] Not including Newport Barracks.

[3] Computed from the resultants for the seasons.

(Nos. 108 and 109.) **Southwestern Ohio.**

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bethel,	George W. Crane,	8	4	1860 to 1869 inclusive.
Chevoit,	Ebenezer Hannaford,	1	3	1855 and 1856.
Cincinnati,	Mr. Ray and others,[1]	28	2	1843, 1845 and 1855 to 1869 inclusive.
College Hill,	G. S. Ormsby and others,[2]	19	6	1854 to 1869 inclusive.
Columbus,	Mr. Kennedy & T. G. Wormley,	1	2	1843, 1845 and 1851.
Dallasburg,	F. G. Hill,	3	8	1859 to 1862 inclusive.
Dayton,	Mr. Williams and others,[3]	1	11	1845, 1850, 1856 and 1858.
Eaton,	Thomas J. Larsh,	1	1	1863, 1864 and 1865.
Franklin,	W. L. Schenck, M.D.,	0	3	1856 and 1857.
Germantown,	L. Groneweg and J. S. Binkerd,	3	8	1854 to 1857 inclusive.
Hillsborough,	Rev. J. M. D. Matthews & others,[4]	13	2	1854 to 1859, and 1863 to 1869, both inclusive.
Jacksonburgh,	J. B. Owsley, M.D.,	1	8	1868 and 1869.
Lafayette,	Samuel Knoble,	0	2	1867.
Lebanon,	Joseph C. Hatfield,	1	1	1843, 1844, 1845, 1858 and 1859.
Mount Auburn,	Senior Class in Mount Auburn Female Institute,	1	2	1868 and 1869.
New Holland,	....	0	2	1869.
North Bend,	R. B. Warder,	4	0	1859 to 1863 inclusive, 1868 and 1869.
Ripley,	J. Ammen and others,[5]	5	6	1857 to 1861, and 1863 to 1869, both inclusive.
Rupell's Station,	J. W. Gamble,	0	5	1860.
Sharonville,	William F. Bowen,	1	2	1859 and 1860.
Springfield,	Rev. J. H. Herron,	0	2	1869.
West Union,	Rev. Wm. Lumsden,	0	1	1861.
Williamsport,	John R. Wilkinson,	0	4	1867, 1868 and 1869.
Yellow Springs,	W. A. Anthony,	0	1	1868.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
108. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[6]	No. of observations.	Spring	275	560	147	314	151	940	470	616	...	N. 85° 7′ W.	.223	N. 29½° E.	.09
		Summer	183	347	98	273	134	1002	436	495	...	S. 74 59 W.	.320	S. 64 W.	.05
		Autumn	160	366	97	349	189	952	350	621	...	S. 73 43 W.	.264	S. 49 E.	.02
		Winter	167	271	99	371	217	981	416	626	...	S. 69 36 W.	.305	S. 21 W.	.05
		The year[7]	...	...	...	...	...	...	...	...	...	S. 77 9 W.	.274		
	No. of miles.	Spring	1451	3370	492	1363	951	7627	4168	5229	...	N. 86 37 W.	.374	N. 12 E.	.08
		Summer	657	1069	260	761	485	4639	1819	2512	...	S. 78 20 W.	.411	S. 29 W.	.03
		Autumn	791	1996	329	1406	1165	5628	2557	3667	...	S. 78 6 W.	.338	S. 77 E.	.06
		Winter	866	1318	316	1385	1391	7788	4028	5312	...	S. 78 9 W.	.463	S. 59 W.	.07
		The year[7]	...	...	...	...	...	...	...	...	...	S. 82 27 W.	.395		
	M'n vel. in miles p.h'r.	Spring	5.28	6.02	3.35	4.34	6.30	8.11	8.87	9.30					
		Summer	3.59	3.16	2.65	2.79	3.62	4.63	4.17	5.07					
		Autumn	4.94	5.45	3.39	4.03	6.16	5.91	7.31	5.90					
		Winter	5.13	4.86	3.19	3.73	6.41	7.94	9.68	8.49					

[1] Mr. Williams, F. W. Hurtt, Geo. W. Harper, A. A. Warder, R. C. and J. H. Phillips and Eli T. Tappan; several independent sets of observations in different parts of the city.
[2] Prof. R. S. Bosworth, Prof. J. H. Wilson, J. W. Hammitt and L. B. Tuckerman.
[3] Cooper Female Seminary, James C. Fischer, M.D., and Lewis Groneweg.
[4] C. C. Janes and Dr. C. C. Samms. [5] Dr. G. Bamback and Mrs. M. M. Marsh.

[6] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.21	4.26	5.69	6.97	6.03
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.61	1.36	1.50	2.13	1.65
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.70	1.75	1.93	3.23	2.38
Excess of the latter over the former	+1.09	+.39	+.43	+1.10	+.73

[7] Computed from the resultants for the seasons.

(No. 109.) **Southwestern Ohio.**—*Continued.*

Kind of observations.		Time of the year.	North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
109. Aggregate number of observations at all stations.	Surface wind.	Spring	1401	2629	1409	2209	1853	5487	4620	4287	1804	S. 81° 29′ W.	.26½		
		Summer	1643	2710	1323	1913	1654	6162	4068	3484	2256	S. 77 59 W.	.25½		
		Autumn	1580	2121	1186	2305	2048	5529	4113	4059	2493	S. 75 58 W.	.26½		
		Winter	1200	1712	1377	2279	2007	6061	5176	4009	2388	S. 58 9 W.	.19		
		The year	5824	9172	5295	8706	7562	23239	17977	15839	8941	S. 76 30 W.	.27½		
	Motion of clouds.	Spring	259	488	351	375	309	1916	2993	1250	...	S. 84 7 W.	.54	N. 74° E.	.04½
		Summer	318	390	168	234	219	1836	2894	1129	...	S. 85 5 W.	.61	N. 66½ W.	.03
		Autumn	247	305	157	271	312	1741	2781	1168	...	S. 84 2 W.	.61½	N. 87 W.	.03
		Winter	142	393	346	463	335	1856	3090	1157	...	S. 80 13 W.	.56	S. 39 E.	.04
		The year[1]	...	...	...	...	...	...	...	...	...	S. 83 43 W.	.58		
	2 preceding combined.	Spring	1660	3117	1760	2584	2162	7403	7613	5537	1804	S. 82 30 W.	.33	N. 29 E.	.02½
		Summer	1961	3100	1491	2147	1873	7998	6962	4613	2256	S. 79 49 W.	.33½	N. 53 E.	.01
		Autumn	1827	2426	1343	2576	2360	7270	6894	5227	2493	S. 79 8 W.	.34	N. 79 E.	.01
		Winter	1342	2105	1723	2742	2342	7917	8266	5166	2388	S. 74 39 W.	.38	S. 41½ W.	.04
		The year	6790	10748	6317	10049	8737	30588	29735	20543	8941	S. 79 12 W.	.34½		

[1] Computed from the resultants for the seasons.

(No. 110.) **Northeastern Kentucky.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Marysville,	E. L. Berthoud,	0	9	1853.
Millersburg,	Revs. J. Miller & G. S. Savage,	4	6	1854 to 1859 inclusive, 1861 and 1862.
Paris, Pleasant Valley,	Mr. Lyle and L. G. Ray,	4	2	1843 and 1856 to 1859 inclusive.
Prospect Hill,	O. Beatty,	1	0	1850.

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
110.	Surface wind.	Spring	160	208	208	186	158	479	540	395	445	S. 86° 26′ W.	.24½		
		Summer	118	202	90	153	114	449	335	334	352	S. 85 33 W.	.25½		
		Autumn	98	133	78	173	183	432	266	279	295	S. 64 58 W.	.27		
		Winter	154	127	163	158	237	528	556	391	291	S. 76 31 W.	.33		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 77 58 W.	.27		
	Motion of clouds.	Spring	45	32	107	39	89	203	558	78	...	S. 77 6 W.	.53½	S. 2° W.	.00½
		Summer	45	23	82	8	70	119	583	52	...	S. 84 7 W.	.61	N. 60½ W.	.10
		Autumn	22	8	74	12	108	59	341	56	...	S. 74 47 W.	.51	S. 56 E.	.03
		Winter	18	36	97	18	109	126	394	64	...	S. 72 45 W.	.48	S. 67 E.	.07
		The year[1]	...	...	...	...	...	...	...	...	...	S. 77 35 W.	.53		
	The two combined.	Spring	205	240	315	225	247	682	1098	473	445	S. 81 59 W.	.32½	N. 40 E.	.03
		Summer	163	225	172	161	184	568	918	386	352	S. 84 48 W.	.37	N. 45 W.	.04½
		Autumn	120	141	152	185	291	491	607	335	295	S. 68 52 W.	.33	S. 27½ E.	.06
		Winter	172	163	260	176	346	654	950	455	291	S. 79 43 W.	.36	N. 82 W.	.01
		The year[1]	...	...	...	...	...	...	...	...	...	S. 79 1 W.	.34½		

[1] Computed from the resultants for the seasons.

(Nos. 111 and 112.) **Eastern Tennessee.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Elizabethton,	Charles H. Lewis,	1	10	1868 and 1869.
Greenville,	S. S. and W. S. Doak,	3	3	1843 and 1866 to 1869 inclusive.
Knoxville,	Mr. Garvin and others,[1]	2	10	1843, 1845, 1854, 1855, 1856, 1860 and 1869.
Pomona,	J. W. Dodge and son,	1	6	1859, 1860 and 1861.
Walnut Grove,	James B. Bean,	0	7	1856.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
111. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[2]	No. of observations.	Spring	84	35	24	23	72	91	55	41	...	S. 79° 53′ W.	.20	S. 37° W.	.11
		Summer	65	42	46	5	31	31	55	24	...	N. 14 52 W.	.15	N. 45 E.	.13
		Autumn	83	70	33	14	32	76	37	41	...	N. 22 32 W.	.16	N. 35 E.	.12
		Winter	41	18	10	2	46	50	31	23	...	S. 77 40 W.	.23	S. 43 W.	.14
		The year[3]	...	...	...	...	...	...	...	...	...	N. 68 11 W.	.14		
	No. of miles.	Spring	440	167	86	78	526	749	303	278	...	S. 65 11 W.	.32		
		Summer	280	220	186	14	151	173	315	80	...	N. 11 29 W.	.12		
		Autumn	355	292	150	32	214	359	148	225	...	N. 38 19 W.	.14		
		Winter	322	77	55	4	537	356	212	175	...	S. 58 29 W.	.27		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 77 52 W.	.18		
	M'n vel. in miles p. h'r.	Spring	5.24	4.77	3.58	3.39	7.31	8.23	5.51	6.78					
		Summer	4.31	5.24	4.04	2.80	4.87	5.58	5.73	3.33					
		Autumn	4.28	4.17	4.55	2.29	6.69	4.72	4.00	5.49					
		Winter	7.85	4.28	5.50	2.00	11.67	7.12	6.84	7.61					
112. Aggregate number of observations at all stations.	Surface winds.	Spring	258	158	140	80	166	577	333	200	432	S. 78 15 W.	.25		
		Summer	150	147	326	70	140	507	335	147	613	S. 59 8 W.	.15		
		Autumn	219	271	267	93	194	451	479	205	527	S. 86 51 W.	.15½		
		Winter	190	160	183	71	197	611	436	201	559	S. 70 35 W.	.27		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 73 44 W.	.20½		
	Motion of clouds.	Spring	6	5	37	10	37	212	170	91	...	S. 70 22 W.	.63	N. 77 W.	.05
		Summer	8	16	82	11	27	249	206	49	...	S. 63 34 W.	.53	S. 80 E.	.07
		Autumn	27	28	37	31	60	162	191	73	...	S. 70 36 W.	.48½	N. 54½ E.	.11
		Winter	15	7	26	18	31	307	248	55	...	S. 66 19 W.	.71	S. 59 W.	.12
		The year[3]	...	...	...	...	...	...	...	...	...	S. 67 29 W.	.59		
	2 preceding combined.	Spring	264	163	177	90	203	789	503	291	432	S. 75 19 W.	.32½	N. 79½ W.	.05
		Summer	158	163	408	81	167	756	541	196	613	S. 61 18 W.	.23½	S. 71 E.	.06½
		Autumn	246	299	304	124	254	613	670	278	527	S. 80 8 W.	.21½	N. 46 E.	.08
		Winter	205	167	209	89	228	918	684	256	559	S. 68 48 W.	.36½	S. 60 W.	.08
		The year[3]	...	...	...	...	...	...	...	...	...	S. 71 12 W.	.28		

[1] O. W. Morris, Prof. Geo. Cooke, L. Griswold, T. L. Griswold and Stephen C. Dodge.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour . . .	6.18	4.75	4.60	7.86	5.85
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.23	.72	.72	1.80	.82
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	2.00	.56	.65	2.13	1.06
Excess of the latter over the former	+.77	—.16	—.07	+.33	+.24

[3] Computed from the resultants for the seasons.

(Nos. 113 to 115.)

Southeastern Ohio.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Athens,	Prof. W. W. Mather,	0	5	1849.
Chilicothe,	Messrs. Davis & Williams,	0	4	1843.
Gallipolis,	G. W. Livesay & A. P. Rogers,	3	11	1854 to 1857, and 1864 to 1867, both inclusive.
Harmar,	W. G. Fuller,	1	1	1860 and 1861.
Hockingport,	Dr. John Rhoades,	1	0	1859 and 1860.
Jackson,	G. L. Crookham & others,[1]	4	3	1854, 1855, 1857, 1858 and 1859.
Kingston,	Prof. John Haywood,	3	9	1863 to 1867 inclusive.
Lancaster,	Mr. Kreider and others,[2]	1	8	1843, 1857 and 1858.
Little Hocking,	James Fraser,	1	1	1862 and 1863.
Marietta,	S. P. Hildreth and others,[3]	28	7	1829 to 1855, and 1858 to 1863, both inclusive.
Portsmouth,	James H. Poe and others,[4]	6	3	1856 to 1865 inclusive, except 1860.
Scioto,	James H. Poe,	0	1	1856.
Zanesville,	Mr. Peters and others,[5]	3	5	1843 to 1845, 1853 to 1857, both inclusive, and 1859.

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences. Direction.	Force.
113. Marietta.	January	157.5	26.5	36.5	54	121.5	181.5	137	74				
	February	153.5	27.5	31	56	88	171	120	107.5				
	March	184	32	36	58.5	107	168.5	121	104				
	April	200	37	43	71	110	160.5	98	69				
	May	181	28	32	76	169	157	85	74				
	June	150	26	31	49	176	205	95.5	47				
	July	187	27	48.5	68	145	206	75.5	47				
	August	210.5	40	39	108.5	175	141	59.5	33.5				
	September	178	43	52	75	173	125	80.5	46				
	October	199	30	47	68.5	155	151	96.5	58				
	November	114	30	41	59.5	100	201	155.5	72				
	December	133.5	21	54	53.5	119	151.5	163	86				
	Spring	565	97	111	205.5	386	486	304	247	S. 82° 24′ W.	.21		
	Summer	547.5	93	118.5	225.5	496	552	230.5	127.5	S. 46 58 W.	.21		
	Autumn	491	103	140	203	428	477	332.5	176	S. 63 14 W.	.21		
	Winter	444.5	75	121.5	163.5	328.5	504	420	267.5	S. 80 27 W.	.29½		
	The year	2048.0	368.0	491.0	797.5	1638.5	2019.0	1287.0	818.0	S. 69 26 W.	.22		
114. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[6] No. of observations.	Spring	168	141	155	132	141	300	362	314	N. 84 29 W.	.207	N. 68° E.	.04
	Summer	132	85	89	49	65	191	177	186	N. 71 6 W.	.210	N. 31 E.	.07
	Autumn	176	59	67	119	126	287	242	230	S. 85 29 W.	.231	S. 13 E.	.02½
	Winter	125	59	90	86	106	325	329	222	S. 82 4 W.	.318	S. 57 W.	.09
	The year[7]	...	...	...	...	...	...	...	...	N. 88 26 W.	.237		
No. of miles.	Spring	770	801.5	713	1020.5	855	2078	2878	1656	S. 81 18 W.	.260	S. 70 E.	.03
	Summer	721	930	367	607	417	1503	1192	1141	N. 80 15 W.	.177	N. 63½ E.	.13
	Autumn	770	240	248	609	750	1737	1805	1044	S. 75 58 W.	.303	S. 4 W.	.04½
	Winter	649	200	342	354	494	1928	3130	1405	S. 86 6 W.	.451	S. 88½ W.	.16
	The year[7]	...	...	...	...	...	...	...	...	S. 85 2 W.	292		
M'n vel. in miles p. h'r.	Spring	4.58	5.68	4.60	7.73	6.06	6.93	7.95	5.27				
	Summer	5.46	10.94	4.12	12.39	6.45	7.87	6.73	6.13				
	Autumn	4.37	4.07	3.70	5.12	5.95	6.05	7.46	4.54				
	Winter	5.19	3.39	3.80	4.12	4.66	5.93	9.51	6.33				

[1] M. Gilmore and S. B. Wood.
[2] Lewis M. Dayton, H. W. Jaeger, W. E. Davis and J. W. Towson.
[3] Rev. Israel W. Andrews and D. P. Adams.
[4] D. B. Cotton, M.D., and Lud. Engelbrecht.
[5] L. M. Dayton, Adam Peters and J. G. F. Holston, M.D.
[6] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.29	7.06	5.52	6.34	6.30
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity.	1.30	1.48	1.28	2.02	1.49
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above.	1.63	1.25	1.67	2.86	1.84
Excess of the latter over the former	+.33	—.23	+.39	+.84	+.35

[7] Computed from the resultants for the seasons.

(No. 115.) **Southeastern Ohio.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
115. Aggregate number of observations at all stations.	Surface winds.	Spring	706	665	556	505	924	1564	1503	914	1240	S. 73° 13′ W.	.23		
		Summer	682	500	391	426	881	1544	835	696	1501	S 61 28 W.	.21		
		Autumn	657	532	380	517	871	1525	932	707	1348	S. 60 37 W.	.21½		
		Winter	641	559	425	513	1046	1734	1443	980	913	S. 66 54 W.	.29		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 65 48 W.	.23½		
	Motion of clouds.	Spring	156	74	104	63	210	829	1285	341	...	S. 78 26 W.	.64		
		Summer	150	115	51	56	148	855	1260	312	...	S. 79 55 W.	.62½	N. 37½°E.	.02
		Autumn	143	70	54	64	168	763	1094	307	...	S. 78 36 W.	.65	S. 78½ E.	.01
		Winter	124	88	101	69	168	766	1224	263	...	S. 77 29 W.	.63½	S. 42½ W.	.01½
		The year[1]	...	...	...	...	...	...	...	...	...	S. 78 28 W.	.64		
	2 preceding combined.	Spring	862	739	660	568	1134	2393	2788	1255	1240	S. 72 6 W.	.34	N. 16½ W.	.01
		Summer	832	615	442	482	1029	2399	2095	1008	1501	S. 71 42 W.	.33	N. 72 E.	.01½
		Autumn	800	602	434	581	1039	2288	2026	1014	1348	S. 70 0 W.	.32½	S. 82 E.	.02
		Winter	765	647	526	582	1214	2500	2667	1243	913	S. 71 45 W.	.37	S. 81 W.	.03
		The year[1]	...	...	...	...	...	...	...	...	...	S. 72 20 W.	.34		

[1] Computed from the resultants for the seasons.

(Nos. 116 and 117.) **Northwestern Virginia,**[1] south of latitude 40°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Ashland,	Samuel Couch and Wm. R. Boyers,	6	11	1854 to 1858 inclusive, 1860 and 1865 to 1869 inclusive.
Burning Springs,	Robert B. Bliven,	0	4	1867 and 1868.
Grafton,	W. H. Sharp,	1	2	1867 and 1868.
Huttonsville,	Jacob J. Hill,	0	2	1869.
Kanawha,	David L. Ruffner,	2	5	1856 to 1861 inclusive.
Mustapha,	James Frazer,	1	1	1856 and 1859.
New England,	James Frazer,	1	10	1860 and 1861.
Sisterville,	Enoch D. Johnson,	0	5	1857.
White Day,	W. H. Sharp,	0	11	1868 and 1869.
Wirt Court House,	Josiah W. Hoff,	2	8	1856, 1857 and 1858.

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
116. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[3]	No. of observations.	Spring	50	50	9	114	77	315	61	280	...	S. 74° 47′ W.	.280	N. 79 W.	.13
		Summer	59	86	1	139	177	197	36	87	...	S. 23 53 W.	.166	S. 54 E.	.09
		Autumn	160	74	2	146	148	186	17	103	...	S. 33 10 W.	.079	N. 72 E.	.10
		Winter	99	51	3	100	159	265	44	189	...	S. 59 50 W.	.206	S. 82 W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 54 46 W.	.171		
	No. of miles.	Spring	484	649	60	827	529	2668	265	2615	...	S. 85 53 W.	.267	N. 72 W.	.13
		Summer	452	793	2	1236	577	1682	177	642	...	S. 18 6 W.	.145	S. 50 E.	.13
		Autumn	1223	736	60	1281	873	1598	309	1210	...	S. 69 2 W.	.066	N. 64 E.	.09
		Winter	1000	471	28	885	931	2230	468	1604	...	S. 72 58 W.	.199	N. 89 W.	.04
		The year[2]	...	...	...	...	...	...	...	...	...	S. 67 58 W.	.153		
	M'n vel. in miles p. h'r.	Spring	9.68	12.98	6.67	7.25	6.87	8.47	4.34	9.34					
		Summer	7.66	9.22	2.00	8.89	4.93	8.54	4.92	7.38					
		Autumn	7.64	9.95	30.00	8.77	5.90	8.59	18.18	11.75					
		Winter	10.10	9.24	9.33	8.85	5.86	8.42	10.64	8.49					

[1] The divisions of Virginia were made before the separation of the State of West Virginia from it, and it is thought best now to retain them owing to the difficulty of making a change in the recomputations.
[2] Computed from the resultants for the seasons.
[3] For note see next page.

(No. 117.) **Northwestern Virginia.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
117. Aggregate number of observations at all stations.	Surface winds.	Spring	341	108	349	182	664	667	842	620	784	S. 71° 10′ W.	.28		
		Summer	419	133	268	206	711	534	590	228	1003	S. 47 58 W.	.20½		
		Autumn	380	119	101	195	451	343	328	579	1005	N. 86 20 W.	.19		
		Winter	277	138	285	176	484	667	856	593	983	S. 77 0 W.	.28½		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 79 9 W.	.22½		
	Motion of clouds.	Spring	110	114	241	80	151	593	1000	322	...	S. 80 40 W.	.49	N. 53° W.	.06
		Summer	130	210	173	79	140	738	506	224	...	S. 70 52 W.	.39	S. 84 E.	.06
		Autumn	138	147	57	94	193	518	344	188	...	S. 67 50 W.	.39½	S. 70 E.	.07
		Winter	66	66	161	68	141	586	713	305	...	S. 75 48 W.	.53	S. 84 W.	.08
		The year[1]	...	...	...	...	...	...	...	...	...	S. 74 18 W.	.45		
	2 preceding combined.	Spring	451	222	590	262	815	1260	1842	942	784	S. 75 57 W.	.35½	N. 88 W.	.05
		Summer	549	343	441	285	851	1272	1096	452	1003	S. 59 33 W.	.26	S. 55½ E.	.08
		Autumn	518	266	158	289	644	861	672	767	1005	S. 80 41 W.	.25	N. 43 E.	.06½
		Winter	343	204	446	244	625	1253	1569	898	983	S. 76 22 W.	.36½	N. 89 W.	.06
		The year[1]	...	...	...	...	...	...	...	...	...	S. 73 36 W.	.30½		

(Column group heading over North through Calm or variable: RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS.)

[1] Computed from the resultants for the seasons.

☞ Note from No. 116, page 416.

[3] From this table we obtain the following summary of results:—

	Spring	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.23	7.44	8.72	8.04	8.11
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.30	1.24	.69	1.66	1.39
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.20	1.08	.58	1.60	1.24
Excess of the latter over the former	—.10	—.16	—.11	—.06	—.15

(Nos. 118 and 119.) **Central Virginia.**[1]

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Charlottesville,	C. J. Meriwether and J. R. Abell,	2	4	1850, 1851, 1860 and 1861.
Huntersville,	William Skeen,	1	2	1850, 1851, 1852, 1854 and 1856.
Lewisburg,	Thos. Patton & J. W. Stalnaker,	4	8	1854 to 1859 inclusive.
Madison Court House,	Dr. A. M. Grinnan,	1	0	1851 and 1852.
Meadow Dale,	James Slaven,	0	2	1859.
Montcalm,	Chs. J. Meriwether,	0	10	1853, 1854 and 1855.
Monticello,[2]	President T. Jefferson,	0	9	?
Montview,	J. R. Abell,	1	0	1858, 1859 and 1860.
Mossy Creek,	Jedediah Hotchkiss,	1	5	1856, 1857 and 1858.
Mount Solon,	James T. Clarke,	1	11	1867, 1868 and 1869.
Rougement,	Geo. C. Dickinson,	4	1	1857 to 1861 inclusive.
Staunton,	J. B. Imboden and J. C. Covell,	1	8	1849, 1868 and 1869.
Stribling Springs,	Jedediah Hotchkiss,	0	6	1858 and 1859.

[1] See note to Northwestern Virginia, page 416.
[2] Not used.

(Nos. 118 and 119.) **Central Virginia.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
118. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	30	62	3	19	16	156	101	108	...	N. 87° 22′ W.	.460	N. 61° W.	.11
		Summer	2	27	37	21	5	83	59	57	...	S. 78 52 W.	.302	S. 68 E.	.07
		Autumn	19	64	37	56	25	159	117	122	...	S. 82 13 W.	.326	S. 77½ E.	.04
		Winter	37	100	30	73	73	215	220	167	...	S. 81 26 W.	.373	S. 20 W.	.02
		The year[2]	...	...	...	...	...	...	...	...	...	S. 84 36 W.	.363		
	No. of miles.	Spring	306	772	18	133	102	2151	1769	1718	...	N. 84 48 W.	.554	N. 42 W.	.07
		Summer	14	135	218	122	32	622	524	395	...	S. 78 39 W.	.413	S. 51 E.	.12
		Autumn	133	336	185	253	281	1324	1263	1314	...	S. 87 58 W.	.494	S. 42½ E.	.01½
		Winter	373	1115	168	396	427	2206	3513	1983	...	N. 86 46 W.	.514	N. 14½ W.	.03½
		The year[2]	...	...	...	...	...	...	...	..	...	S. 89 3 W.	.504		
	M'n vel. in miles p.h'r.	Spring	10.20	12.45	6.00	7.00	6.37	13.79	17.51	15.91					
		Summer	7.00	5.00	5.89	5.81	6.40	7.49	8.88	6.93					
		Autumn	7.00	5.25	5.00	4.52	11.24	8.33	10.79	10.77					
		Winter	10.08	11.15	5.60	5.42	5.85	10.26	15.97	11.87					
119. Aggregate number of observations at all stations.	Surface wind.	Spring	364	476	226	217	644	981	1288	605	233	S. 77 55 W.	.34½		
		Summer	253	228	159	201	655	652	680	229	421	S. 50 58 W.	.31		
		Autumn	448	488	136	256	407	883	711	488	220	S. 85 50 W.	.25½		
		Winter	406	564	139	274	722	1227	1166	685	123	S. 74 32 W.	.35		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 72 1 W.	.20		
	Motion of clouds.	Spring	120	206	106	105	237	587	1005	374	...	S. 81 47 W.	.50		
		Summer	130	86	66	83	139	391	908	160	...	S. 81 18 W.	.57		
		Autumn	92	179	67	89	109	436	621	202	...	S. 81 43 W.	.46		
		Winter	80	163	115	139	315	693	845	364	...	S. 70 22 W.	.49½		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 78 49 W.	.50½		
	2 preceding combined.	Spring	484	682	332	322	881	1568	2293	979	233	S. 79 37 W.	.40	N. 49 W.	.04
		Summer	383	314	225	284	794	1043	1588	389	421	S. 66 25 W.	.39	S. 5⅓ E.	.06
		Autumn	540	667	203	345	516	1319	1332	690	220	S. 84 0 W.	.31½	N. 37 E.	.08
		Winter	486	727	254	413	1037	1920	2011	1049	123	S. 72 48 W.	.40	S. 36 W.	.03
		The year[2]	...	...	...	...	...	...	...	...	...	S. 75 16 W.	.37½		

[1] Including Salem in Southern Virginia.
From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	14.08	7.09	8.50	11.13	10.20
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	6.48	2.14	2.77	4.15	3.70
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	7.80	2.93	4.20	5.72	5.14
Excess of the latter over the former	+1.32	+.79	+1.43	+1.57	+1.44

[2] Computed from the resultants for the seasons.

(No. 120.) **Southern Virginia.**

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Christianburg,	William C. Hagan,	0	5	1850 and 1851.
Fork Union,	Silas B. Jones,	1	4	1859, 1860 and 1861
Hill Grove,	....	0	1	1860.
Lexington,	Wm. K. Park & W. H. Ruffner,	1	2	1861 and 1869.
Longwood,	Thomas J. Wickline,	0	3	1857.
Lynchburg (near),	Chs. J. Meriwether,	1	8	1866 to 1869 inclusive.
Prince Edward's Court House,	Prof. F. J. Nuttaner,	0	2	1850 and 1852.
Salem,	J. Carson Wells,	0	9	
Snowville,	J. W. Stalnaker,	2	3	1867, 1868 and 1869.
Wytheville,	W. D. Roedel,	4	9	1860 and 1861.

(No. 120.) **Southern Virginia.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
120. Aggregate number of observations at all stations.	Surface wind.	Spring	135	169	177	95	243	444	619	302	403	S. 78° 44′ W.	.31	N. 56° E.	.03
		Summer	64	108	157	66	191	365	474	158	648	S. 66 38 W.	.27½	S. 24 E.	.16
		Autumn	72	125	129	109	146	243	412	308	719	S. 88 7 W.	.22½	N. 19 W.	.06
		Winter	194	147	169	95	234	323	556	409	325	S. 79 23 W.	.30½	N. 38 W.	.10
		The year[1]	...	...	...	...	...	...	...	...	...	S. 77 53 W.	.27½		
	Motion of clouds	Spring	30	45	45	47	29	185	267	140	...	S. 85 14 W.	.49		
		Summer	12	22	62	34	39	173	218	48	...	S. 65 34 W.	.49		
		Autumn	31	25	55	45	34	106	347	126	...	S. 89 35 W.	.53		
		Winter	27	17	73	14	24	118	352	145	...	N. 86 53 W.	.57½		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 83 55 W.	.51½		
	2 preceding combined.	Spring	165	214	222	142	272	629	886	442	403	S. 80 51 W.	.35	S. 56 W.	.02½
		Summer	76	130	219	100	230	538	692	206	648	S. 66 17 W.	.32	S. 21½ E.	.09
		Autumn	103	150	184	154	180	349	759	434	719	S. 88 46 W.	.30	N. 36 E.	.04
		Winter	221	164	242	109	258	441	908	554	325	N. 86 2 W.	.36½	N. 31 W.	.08
		The year[1]	...	...	...	...	...	...	...	...	...	S. 82 43 W.	.33		

[1] Computed from the resultants for the seasons.

(Nos. 121 to 124.) **Western and Middle North Carolina.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Attaway Hill,	F. J. Koon,	3	7	1861, 1867, 1868 and 1869.
Chapel Hill,	Prof. James Phillips and D. S. Patrick,	9	1	1845, 1846, 1854 to 1859 inclusive, 1861 and 1869.
Davidson College,	Prof. W. C. Kerr,	1	11	1857, 1858 and 1859.
Florence,	Mr. Watkins,	0	1	1843.
Greensboro',	George F. Moore, M.D.,	0	1	1860.
Guilford Court House,[1]	....	0	3	1843.
Guilford Mine,	Alexander Wray,	0	2	1867.
Prospect Hill,[1]	....	0	1	1849.
Raleigh,	T. Carter and others,[2]	1	3	1859, 1860 and 1868.
Rutherfordton,	J. W. Calloway,	0	9	1849.
Statesville,	Thomas A. Allison,	2	10	1866 to 1869 inclusive.
Trinity College,	Rev. B. Craven,	0	6	1861 and 1869.
West Green,	Samuel W. Westbrook,	0	1	1859.

Place of observation.	Time of the year.	North.	Bet. N. & N. E.	N. E.	Bet N. E. & E.	East.	Bet. E. & S. E.	S. E.	Bet. S. E & S.	South.	Bet S. & S. W.	S. W.	Bet. S. W. & W.	West.	Bet. W. & N. W.	N. W.	Bet N. W. & N	Calm.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
121. West. N. Carolina.[3]	Spring	1	...	4	...	19	...	0	...	7	...	11	...	11	...	8	...	57	S. 26° 15′ W.	.05		
	Summer	1	...	4	...	9	...	4	...	1	...	6	...	5	...	3	...	151	S. 57 17 E.	.02		
	Autumn	8	...	10	...	5	...	0	...	0	...	2	...	5	...	9	...	119	N. 1 58 W.	.13		
	Winter	0	...	3	...	0	...	0	...	0	...	7	...	4	...	4	...	37	West	.17		
	The year[5]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 54 W.	.05		
122. Chapel Hill.[4]	January	24	2	21	1	17	0	11	2	17	16	44	13	46	7	22	3	...	S. 78 8 W.	.32		
	February	28	6	24	4	14	0	4	3	25	8	36	7	23	2	37	3	...	N. 71 28 W.	.22		
	March	31	4	22	5	26	1	14	4	23	15	38	3	37	2	20	2	...	S. 68 42 W.	.12		
	April	24	1	27	5	38	2	19	1	44	9	34	4	15	0	15	2	...	S. 30 16 E.	.17		
	May	21	3	25	4	45	9	18	4	41	10	17	7	28	1	13	1	...	S. 43 27 E.	.18		
	June	18	6	24	2	13	0	10	2	35	8	36	7	27	3	23	1	...	S. 63 15 W.	.21		
	July	26	8	24	7	37	3	14	1	34	6	40	6	26	0	9	2	...	S. 16 42 E.	.09		
	August	29	8	29	4	56	0	15	2	35	4	23	4	32	0	7	2	...	S. 86 59 E.	.14		
	September	43	8	31	5	40	3	15	0	17	3	20	1	32	1	17	2	...	N. 27 56 E.	.19		
	October	38	17	28	5	42	0	13	1	30	7	7	2	39	1	16	1	...	N. 31 6 E.	.17		
	November	40	1	12	2	26	1	12	1	21	4	39	6	58	3	12	1	...	S. 84 49 W.	.16		
	December	22	2	35	4	21	1	10	1	6	5	66	4	35	2	30	0	...	N. 84 35 W.	.21		
	The year	344	66	302	48	375	20	155	22	328	95	400	64	398	22	221	20	...	S. 76 5 W.	.06		

[1] Not used. [2] W. H. Hamilton and Rev. Fisk P. Brewer. [3] Observed at Rutherfordton.

[4] These observations were originally recorded for 32 points of the compass, and the resultants here given were computed from that record. See the author's former work on the "Winds of the Northern Hemisphere."

[5] Computed from the resultants for the seasons.

(Nos. 123 and 124.) **Western and Middle North Carolina.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
123. Surface wind at Chapel Hill in the years 1854, 1855, 1856 and 1857.[1]	No. of observations.	Spring	127	132	68	47	105	192	279	147	...	N. 81° 11′ W.	.299	S. 51° E.	.04
		Summer	132	117	69	25	135	158	381	68	...	S. 89 45 W.	.342	S. 7 W.	.07½
		Autumn	159	148	47	26	92	135	301	159	...	N. 63 20 W.	.355	N. 10 E.	.09
		Winter	123	108	43	28	105	171	284	205	...	N. 76 30 W.	.396	N. 70 W.	.05
		The year[3]	...	...	...	...	...	...	...	...	...	N. 77 32 W.	.343		
	No. of miles.	Spring	616	450	196	136	357	765	1378	971	...	N. 72 34 W.	.448	S. 69 W.	.01½
		Summer	472	356	180	72	378	484	1214	275	...	N. 83 23 W.	.373	S. 22 E.	.10
		Autumn	740	575	146	80	310	459	1116	949	...	N. 53 8 W.	.430	N. 28½ E.	.14
		Winter	438	348	128	66	405	743	1251	1150	...	N. 76 31 W.	.493	S. 72 W.	.07½
		The year[3]	...	...	...	...	...	...	...	...	...	N. 70 42 W.	.431		
	M'n vel. in miles p.h'r.	Spring	4.85	3.41	2.88	2.89	3.40	3.98	4.94	6.61					
		Summer	3.58	3.04	2.61	2.88	2.80	3.06	3.19	4.04					
		Autumn	4.65	3.89	3.11	3.08	3.37	3.40	3.71	5.97					
		Winter	3.56	3.22	2.98	2.36	3.86	4.35	4.40	5.61					
124. Middle North Carolina.[2]	Surface wind.	Spring	391	828	323	315	470	1246	834	523	468	S. 76 35 W.	.18	-	
		Summer	335	631	290	211	447	1080	782	239	585	S. 63 42 W.	.20		
		Autumn	462	764	229	170	272	722	798	515	508	N. 59 24 W.	.20½		
		Winter	407	773	213	188	367	959	719	663	447	N. 75 55 W.	.21		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 87 59 W.	.18½		
	Motion of clouds.	Spring	97	312	74	133	216	976	301	217	...	S. 55 1 W.	.40	S. 31 E.	.01
		Summer	107	301	88	87	182	1019	354	136	...	S. 55 52 W.	.43	S. 48 W.	.03
		Autumn	51	327	64	79	106	693	252	139	...	S. 60 59 W.	.33	N. 35 E.	.08
		Winter	61	259	41	77	131	917	239	145	...	S. 55 36 W.	.46	S. 49 W.	.06
		The year[3]	...	...	...	...	...	...	...	...	...	S. 56 23 W.	.40		
	2 preceding combined.	Spring	488	1140	397	448	686	2222	1135	740	468	S. 66 7 W.	.24	S. 16 E.	.04
		Summer	442	932	378	298	629	2099	1136	375	585	S. 59 45 W.	.27½	S. 5½ W.	.08
		Autumn	513	1091	293	249	378	1415	1050	654	508	N. 81 24 W.	.21	N. 15 E.	.09
		Winter	468	1032	254	265	498	1876	958	808	447	S. 81 48 W.	.26	N. 47 W.	.04
		The year[3]	...	...	...	...	...	...	...	...	...	S. 75 13 W.	.24		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.26	3.16	4.10	4.24	3.94
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.27	1.07	1.46	1.68	1.35
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.91	1.18	1.76	2.09	1.70
Excess of the latter over the former	+.64	+.11	+.30	+.41	+.35

[2] Observed at all the foregoing places except Rutherfordton.
[3] Computed from the resultants for the seasons.

(Nos. 125 and 126.) **Northeastern Virginia.**[1]

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alexandria,	Benjamin Hallowell,	4	6	1854 to 1858 inclusive.
Berryville,	Dr. R. and Miss E. Kownslar,	2	0	1856 and 1857.
Capon Bridge,	John J. G Offutt,	0	2	1857.
Charlestown,	....	0	1	1853.
Crackwhip,	D. H. Ellis,	1	7	1856, 1857 and 1859.
Falmouth,	Abraham Van Doren,	1	2	1860 and 1861.
Fredericksburg,	B. R. Wellford and C. H. Roby	2	6	1849 and 1859 to 1861 inclusive.
Harper's Ferry,	L. J. Bell,	0	2	1860.

[1] See note to N. W. Virginia, page 416.

(Nos. 125 and 126.) **Northeastern Virginia.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Hewlett's,	J. F. Adams,	0	6	1867.
Leesburg,	N. F. D. Browne,	0	4	1849.
Lewinsville,	Rev. Charles B. McKee,	1	3	1858 and 1859.
Mechanicsville,	William A. Martin,	0	2	1869.
New Creek Depot,	Hendricks Clark,	0	3	1854.
Paddytown,	....	0	3	1852 and 1853.
Piedmont,	Franklin Williams,	0	2	1869.
Plains,	John Pickett,	0	5	1859 and 1860.
Poplar Grove,	James E. Kendall,	3	3	1856 to 1859 inclusive.
Powhattan Hill,	Edward T. Tayloe,	1	9	1868 and 1869.
Romney,	W. H. McDowell,	0	2	1852.
Front Run Valley,[1]				
Vienna,	H. C. Williams & Miss L. R. Thrift,	0	2	1869.
Winchester,	J. W. Marvin,	4	3	1854 to 1861 inclusive, except 1859.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoo influences. Direction.	Force.
125. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2] No. of observations.	Spring	295	280	211	286	554	406	705	696	...	S. 86° 11′ W.	.202	N. 83° W.	.02
	Summer	242	301	210	291	636	437	464	379	...	S. 43 56 W.	.167	S. 30 E.	.12
	Autumn	285	288	167	155	566	279	498	458	...	S. 83 36 W.	.154	S. 85 E.	.02
	Winter	323	285	156	165	382	411	556	872	...	N. 70 25 W.	.254	N. 33 W.	.12
	The year[3]	...	...	...	...	...	...	...	...	...	S. 84 41 W.	.178		
No. of miles.	Spring	2205	1720	1297	1837	3423	3278	6979	8925	...	N. 77 9 W.	·324	N. 60 W.	.05
	Summer	1187	1384	784	1331	3203	2576	2758	2359	...	S. 58 58 W.	.220	S. 26 E.	.18
	Autumn	1605	1516	937	944	2850	1493	3839	3865	...	N. 80 24 W.	.226	S. 77 E.	.05
	Winter	2356	1158	1013	785	1655	1875	4439	8077	...	N. 59 31 W.	.376	N. 20 W.	.15
	The year[3]	...	...	...	...	...	...	...	...	...	N. 78 4 W.	.277		
M'n vel. in miles p.h'r.	Spring	7.47	6·14	6.15	6.42	6.18	8.07	9.90	12.82					
	Summer	4.90	4.60	3.73	4·57	5.04	5.89	5.94	6.22					
	Autumn	5.63	5.26	5.61	6.09	5.04	5.35	7.71	8.44					
	Winter	7.29	4.06	6·49	4·76	4.33	4.56	7·98	9.26					
126. Aggregate number of observations at all stations. Surface wind.	Spring	719	542	614	622	875	761	1469	1414	1388	N. 81 55 W.	.19		
	Summer	475	499	619	633	721	677	1516	749	1072	S. 76 16 W.	.17		
	Autumn	638	523	639	461	869	478	1456	978	1213	N. 81 46 W.	.16		
	Winter	877	529	392	357	731	682	1126	1505	1552	N. 62 49 W.	.24		
	The year[3]	...	...	...	...	...	...	...	...	...	N. 80 45 W.	.18½		
Motion of clouds.	Spring	95	81	117	47	116	319	858	257	...	S. 87 47 W.	.56		
	Summer	147	76	84	59	119	397	1229	342	...	N. 89 57 W.	.64		
	Autumn	80	46	92	52	92	281	1024	248	...	S. 88 10 W.	.64½		
	Winter	80	70	44	15	55	261	828	208	...	N. 88 34 W.	.67½		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 89 26 W.	.63		
2 preceding combined.	Spring	814	623	731	669	991	1080	2327	1671	1388	N. 85 28 W.	.25½	S. 87½ E.	.02
	Summer	622	575	703	692	840	1074	2745	1091	1072	S. 83 51 W.	.28½	S. 10 W.	.06
	Autumn	718	569	731	513	961	759	2480	1226	1213	N. 86 58 W.	.26	S. 47½ E.	.02
	Winter	957	599	436	372	786	943	1954	1713	1552	N. 72 5 W.	.30½	N. 15 W.	.07
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 55 W.	.27½		

[1] Same as Crackwhip or Wardersville.
[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.64	5.26	6.32	6.78	6.75
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.75	.88	.97	1.72	1.20
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.80	1.16	1.43	2.55	1.87
Excess of the latter over the former	+1.05	+.28	+.46	+.83	+.67

[3] Computed from the resultants for the seasons.

(No. 127.) **Southern Pennsylvania.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bendersville,	Franklin W. Cook,	0	7	1860.
Brownville,	J. Allen Hubbs,	0	2	1869.
Chambersburg,	A. Thompson, Jr., & Wm. Heyser, Jr.,	2	6	1839, 1858, 1859, 1861 and 1862.
Cochranville,	Mr. Linton,	0	2	1843.
Connellsville,	John Taylor,	7	6	1862 to 1869 inclusive.
Fountain Dale,	S. C. Walker,	1	9	1868 and 1869.
Gettysburg,	Rev. M. Jacobs and others,[1]	11	0	1839 to 1841 and 1854 to 1865, both inclusive, except 1860.
Mercersburg,	Prof. Traill Green, M.D.,	0	4	1843.
Uniontown,	Freeman Lewis and Mr. Weethee,	1	2	1840, 1841 and 1860.
Waynesboro,	Rev. D. J. Eyler	1	0	1852 and 1853.
York,'	Calvin Mason,	0	3	1839 and 1840.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
127. Aggregate.	Surface winds.	Spring	549	709	590	657	867	1450	1691	1399	713	S. 81° 36′ W.	.25½		
		Summer	584	633	514	409	1180	1661	1664	1032	692	S. 69 10 W.	.29½		
		Autumn	623	590	545	517	930	1439	1818	1092	825	S. 77 37 W.	.28		
		Winter	575	866	541	527	789	1446	1939	1607	627	S. 77 33 W.	.29½		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 76 11 W.	.28		
	Motion of clouds.	Spring	257	273	242	212	360	1283	3240	1095	...	S. 87 27 W.	.62½	N. 60° E.	.01
		Summer	387	416	332	267	525	1535	3480	1242	...	S. 87 2 W.	.56½	S. 89 E.	.06
		Autumn	334	260	262	247	446	1362	3296	1104	...	S. 86 18 W.	.60½	S. 74 E.	.03
		Winter	158	108	183	99	249	1188	3627	1048	...	S. 87 51 W.	.73½	N. 88 W.	.11
		The year[2]	...	...	...	...	...	...	...	...	...	S. 87 11 W.	.63		
	The two combined.	Spring	806	982	832	869	1227	2733	4931	2494	713	S. 85 30 W.	.42	N. 75 E.	.02
		Summer	971	1049	846	676	1705	3196	5144	2274	692	S. 80 49 W.	.42½	S. 34 E.	.04
		Autumn	957	850	807	764	1376	2801	5114	2196	825	S. 83 19 W.	.43	S. 49 E.	.02
		Winter	733	974	724	626	1038	2634	5566	2655	627	S. 89 40 W.	.48	N. 50 W.	.05
		The year[2]	...	...	...	...	...	...	...	...	...	S. 84 57 W.	.43½		

[1] D. Eyster and H. E. Jacobs. [2] Computed from the resultants for the seasons.

(Nos. 128 to 131.) **Northern Maryland.**

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Baltimore,	Baltimore Academy and Alfred M. Mayer,	11	1	1818 to 1824 inclusive, 1829, 1835, 1836, 1837, 1857, 1858 and 1859.
Catonsville,	George S. Grape,	1	9	1865, 1866 and 1867.
Chestertown,	James A. Pearce, Jr., and others,[2]	5	6	1855 to 1864 inclusive, except 1860.
Elkton,[1]	....	0	2	1843.
Emmettsburg,	Eli Smith and Prof. C. H. Jourdan,	5	5	1843 and 1866 to 1869 inclusive.[3]
Fort McHenry,	Post Surgeon,	28	0	1831 to 1859 inclusive.
Frederick City,	H. E. Hanschew and Miss H. M. Baer,	10	6	1854 to 1863 inclusive, 1865, 1866 and 1869.
Hagerstown,	Rev. J. P. Carter,	0	1	1852.
Leitersburg,	Lewis A. and Jacob E. Bell,	4	4	1852 and 1858 to 1862 inclusive.
New Windsor,	Prof. J. P. Nelson,	0	2	1852.
Port Deposit,	Henry W. Thorp,	0	2	1850.
Sandy Spring,	Isaac Bond,	0	7	1850 and 1851.
Sykesville,	Wm. Baer and Miss H. M. Baer,	11	9	1854 to 1865 inclusive.
Union Bridge,	W. Gillingham,	0	1	May, 1864.
Woodlawn,	James O. McCormick,	4	9	1865 to 1869 inclusive.

[1] Not used. [2] Prof. A. W. Clark, Rev. A. Sutton and Prof. J. Russell Dutton. [3] Two independent records.

(Nos. 128 to 131.) **Northern Maryland.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
128. Baltimore (Maryland Academy).	The year	41	96	140	156	63	166	78	231	...	S. 67° 54′ W.	.04	....	...	366
129. Fort McHenry, 1831–1835.	January	11	29	14	11	1	16	24	49	...	N. 37 0 W.	.35			
	February	2	24	11	11	1	23	25	44	...	N. 55 38 W.	.31			
	March	3	18	34	23	2	17	19	39	...	N. 18 41 E.	.09			
	April	3	29	32	25	3	10	19	29	...	N. 55 26 E.	.18½			
	May	2	15	17	34	14	22	30	21	...	S. 18 32 W.	.18			
	June	2	16	9	32	9	22	22	38	...	S. 71 57 W.	.15			
	July	1	10	3	24	19	38	34	26	...	S. 55 8 W.	.41			
	August	3	23	7	33	8	27	25	29	...	S. 59 22 W.	.13½			
	September	2	22	10	20	12	23	31	30	...	S. 82 47 W.	.19			
	October	7	25	14	23	1	25	17	43	...	N. 40 24 W.	.16½			
	November	11	27	14	18	2	15	18	45	...	N. 21 46 W.	.26			
	December	5	29	7	10	0	16	24	64	...	N. 41 17 W.	.45			
	The year	52	267	172	264	72	254	288	457	...	N. 59 6 W.	.15½	....	...	1826
30. Fort McHenry, 1831–1859.	Spring	678	366	701	1069	590	1040	1288	361	...	S. 32 21 W.	.17			
	Summer	579	1102	500	1156	753	1492	1380	1104	...	S. 66 29 W.	.15			
	Autumn	825	836	306	735	419	789	1073	1120	...	N. 44 47 W.	.16			
	Winter	828	1283	349	567	283	958	1511	1839	...	N. 47 27 W.	.33			
	The year[1]	...	...	...	...	...	...	...	...	...	N. 77 36 W.	.15			
131. Aggregate. Surface winds.	Spring	1317	2830	1486	2546	1496	3094	3718	4395	735	N. 75 51 W.	.18			
	Summer	1354	2277	1145	2528	1897	3993	3488	2917	921	S. 68 52 W.	.20			
	Autumn	1563	2295	985	2061	1214	2784	3445	4104	1033	N. 71 12 W.	.23			
	Winter	1494	2666	943	1613	932	2832	3957	5271	803	N. 62 4 W.	.31½			
	The year[1]	...	...	...	...	...	...	...	...	...	N. 77 10 W.	.22			
Motion of clouds.	Spring	255	385	279	387	333	879	3304	1291	...	N. 86 49 W.	.56½	N. 66° E.	.01½	
	Summer	393	412	325	491	374	1026	3497	1099	...	N. 89 47 W.	.53	S. 62 E.	.05	
	Autumn	309	262	305	382	316	955	2887	1216	...	N. 88 33 W.	.55	S. 69 E.	.03	
	Winter	138	185	254	254	186	792	3297	1482	...	N. 84 51 W.	.66	N. 70 W.	.08	
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 23 W.	.57½			
The two combined.	Spring	1572	3215	1765	2933	1829	3973	7022	5686	735	N. 82 13 W.	.30½	S. 74½ E.	.02	
	Summer	1747	2689	1470	3019	2271	5019	6985	4016	921	S. 79 26 W.	.29½	S. 21 E.	.10	
	Autumn	1872	2557	1290	2443	1530	3739	6332	5320	1033	N. 78 59 W.	.32	N. 25 E.	.02	
	Winter	1632	2851	1197	1867	1118	3624	7254	6753	803	N. 71 13 W.	40½	N. 37½ W.	.12	
	The year[1]	...	...	...	...	...	...	...	...	...	N. 82 3 W.	.32½			

[1] Computed from the resultants for the seasons.

(No. 132.) **Southern Pennsylvania and Northern Maryland.**

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
132. Surface winds at Smithsonian Stations in the year 1854, 1855, 1856 and 1857.[1]	No. of observations.	Spring	201	234	52	172	313	619	695	650	...	S. 87° 53′ W.	.402	N. 50° W.	.01
		Summer	202	244	104	192	337	797	725	373	...	S. 70 45 W.	.371	S. 21 E.	.11
		Autumn	186	266	95	163	254	564	806	495	...	S. 87 49 W.	.365	N. 67 E.	.03
		Winter	199	307	79	123	211	582	905	737	...	N. 81 6 W.	.435	N. 24 W.	.10
		The year[2]	...	...	...	...	...	...	...	...	...	S. 87 30 W.	.440		
	No. of miles.	Spring	920	870	182	781	1705	2935	3506	6253	...	N. 79 22 W.	.483	N. 32 W.	.07
		Summer	692	999	368	816	1550	3780	2629	1769	...	S. 66 19 W.	.389	S. 23 E.	.23
		Autumn	771	1295	304	882	1270	2810	3484	4271	...	N. 82 55 W.	.396	N. 64 E.	.04
		Winter	715	1156	373	597	835	2655	5196	6529	...	N. 73 21 W.	.542	N. 34 W.	.15
		The year[2]	...	...	...	...	...	...	...	...	...	N. 83 51 W.	.444		
	Mean vel. in miles per hour.	Spring	4.58	3.72	3.50	4.54	5.45	4.74	5.04	9.62					
		Summer	3.43	4.09	3.54	4.25	4.60	4.75	3.63	4.74					
		Autumn	4.15	4.87	3.20	5.41	5.00	4.98	4.32	8.63					
		Winter	3.59	3.77	4.72	4.85	3.96	4.56	5.74	8.86					

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.84	4.24	5.33	5.74	5.29
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.35	1.57	1.95	2.50	2.33
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.82	1.65	2.11	3.11	2.35
Excess of the latter over the former	+.47	+.08	+.16	+.61	+.02

[2] Computed from the resultants for the seasons.

(Nos. 133 to 138.) **District of Columbia and Southern Maryland.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Agricultural College, Md.,	Montgomery Johns, M.D.,	1	2	1861, 1862 and 1863.
Annapolis, Md.	A. Zumbrock & W. R. Goodman,	12	3	1855 to 1869 inclusive, except 1860.
Bladensburg, Md.,	Benjamin O. Lowndes,	9	0	1854 to 1865 inclusive, except 1859.
Fort Severn, Md.,	Post Surgeon,	7	5	1822, 1831 to 1834 and 1843 to 1845, all inclusive.
Fort Washington, D. C.,	Post Surgeon,	4	5	1833, 1834, 1851, 1852 and 1853.
Georgetown, D. C.,	Rev. C. B. McKee,	0	1	1859.
Isthmus, Md.,	Mr. Banning,	0	11	1843, 1844 and 1845.
Leonardtown, Md.,	Dr. Alex. McWilliams,	0	11	1858 and 1859.
Naval Observatory, D. C.,	Superintendent,	4	0	July, 1838, to June, 1842, inclusive.
Nottingham, Md.,	A. P. Dalrymple,	0	2	1849.
Ridge,	T. G. Stagg,	1	1	1856 and 1857.
St. Inigoes,	Rev. James Stephenson,	7	4	1860 to 1869 inclusive.
St. Mary's,	Rev. James Stephenson,	0	1	1859.
Smithsonian Institution,	....	6	0	1854 to 1859 inclusive.
Washington City,[1]	Josiah Meigs and W. G. Cranch,	10	2	1820 and 1823 to 1835 inclusive.

[1] Exclusive of Naval Observatory and Smithsonian Institution.

(Nos. 133 to 138.) **District of Columbia and Southern Maryland.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
133. U.S. Naval Observat'y.	The year	263	432	189	203	327	562	384	703	528	N. 81° 52′ W.	.15	....	...	1461
134. Washington, D. C.	January	15	46	3	31	19	49	14	71	...	N. 66 24 W.	.20			
	February	11	44	4	25	19	49	6	68	...	N. 51 14 W.	.20			
	March	9	48	7	36	29	27	4	88	...	N. 30 54 W.	.15			
	April	19	32	7	24	29	43	4	79	...	N. 64 12 W.	.20			
	May	12	26	11	43	47	47	4	58	...	S. 25 12 W.	.17			
	June	16	30	10	33	30	63	7	51	...	S. 53 20 W.	.17			
	July	12	27	3	33	36	73	2	62	...	S. 55 18 W.	.25½			
	August	18	43	6	37	33	58	2	51	...	S. 45 42 W.	.09			
	September	18	55	10	25	33	34	5	60	...	N. 11 16 W.	.10½			
	October	12	40	6	21	39	43	12	74	...	N. 88 6 W.	.16			
	November	10	34	2	14	32	53	7	88	...	N. 76 34 W.	.30			
	December	9	35	3	21	35	56	4	85	...	N. 85 52 W.	.25			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 85 12 W.	.17			
135. Fort Severn.	Spring	149	124	37	273	254	179	148	355	...	S. 67 32 W.	.15			
	Summer	120	112	71	250	301	156	138	241	...	S. 22 47 W.	.17			
	Autumn	113	88	31	195	161	108	105	338	...	N. 78 22 W.	.17			
	Winter	88	88	16	128	156	133	123	398	...	N. 74 33 W.	.30			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 24 W.	.17	....	...	2709
136. Fort Washington.	January	43	25	7	22	28	42	25	90						
	February	16	16	10	25	51	61	20	64						
	March	23	34	6	25	44	53	40	66						
	April	29	36	9	28	56	38	20	65						
	May	19	22	14	44	71	56	19	43						
	June	21	15	17	45	63	54	30	39						
	July	31	36	8	41	71	39	16	50						
	August	31	28	7	41	59	54	27	41						
	September	42	62	9	60	58	55	17	80						
	October	33	40	3	34	41	56	23	56						
	November	23	31	6	23	24	57	32	94						
	December	35	19	6	28	26	64	21	103						
	Spring	71	92	29	97	171	147	79	174	...	S. 59 29 W.	.19			
	Summer	83	79	32	127	193	147	73	130	...	S. 26 57 W.	.20			
	Autumn	98	133	18	117	123	168	72	230	...	N. 79 14 W.	.17			
	Winter	94	60	23	75	105	167	66	257	...	N. 80 21 W.	.29½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 74 9 W.	.19	....	...	1613
137. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	73	190	40	233	147	233	108	427	...	N. 82 5 W.	.154	N. 68° E.	.05	
	Summer	59	235	50	173	125	399	120	217	...	S. 55 12 W.	.184	S. 23 E.	.12	
	Autumn	109	187	41	83	112	301	108	209	...	N. 88 40 W.	.190	N. 70 E.	.01	
	Winter	81	143	32	93	110	247	152	405	...	N. 74 5 W.	.315	N. 49 W.	.13	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 89 29 W.	.199			
No. of miles.	Spring	604	1306	216	1399	1060	1495	1144	6004	...	N. 58 18 W.	.361	N. 59 W.	.06	
	Summer	281	1306	234	747	647	1956	826	1497	...	S. 79 26 W.	.206	S. 22½ E.	.19	
	Autumn	770	1499	175	459	682	1706	745	1722	...	N. 62 35 W.	.215	S. 65 E.	.09	
	Winter	521	1119	155	476	556	1054	1288	5262	...	N. 52 47 W.	.497	N. 37 W.	.20	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 61 4 W.	.328			
M'n vel. in miles p.h'r.	Spring	8.27	6.87	5.44	6.00	7.21	6.42	10.59	14.06						
	Summer	4.76	5.56	4.68	4.32	5.18	4.90	6.88	6.90						
	Autumn	7.06	8.02	4.27	5.53	6.09	5.67	6.90	8.24						
	Winter	6.43	7.83	4.84	5.12	5.05	4.27	8.47	12.99						

[1] From this table we obtain the following summary of results:—

	Spring	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.12	5.44	6.75	8.26	7.39
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.40	1.00	1.28	2.60	1.47
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	3.29	1.12	1.45	4.11	2.42
Excess of the latter over the former	+1.89	+.12	+.17	+1.51	+.95

[2] Computed from the resultants for the seasons.

(No. 138.) **District of Columbia and Southern Maryland.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
138. Aggregate number of observations at all stations.	Surface wind.	Spring	1021	1772	889	1329	2117	1884	1131	2776	658	S. 83° 33′ W.	.10		
		Summer	830	1670	742	1236	2368	2219	815	1565	637	S. 22 17 W.	.15		
		Autumn	1065	1628	525	807	1806	1764	917	2379	817	N. 80 16 W.	.14		
		Winter	1213	1561	515	773	1641	1965	1113	3272	893	N. 68 24 W.	.22		
		The year	4392	7063	2860	4348	8259	8394	4360	10695	3533	S. 84 36 W.	.12½		
	Motion of clouds.	Spring	51	40	42	37	31	389	161	115	...	S. 67 48 W.	.52½	N. 75° E.	.06
		Summer	65	82	38	33	31	608	202	131	...	S. 66 4 W.	.56	S. 64 E.	.03
		Autumn	29	26	26	18	14	406	90	114	...	S. 65 7 W.	.62	S. 26½ W.	.05
		Winter	32	13	12	18	29	293	132	128	...	S. 73 30 W.	.63	N. 60 W.	.08
		The year[1]	...	...	...	...	...	...	...	...	...	S. 68 13 W.	.58		
	2 preceding combined.	Spring	1072	1812	931	1366	2148	2273	1292	2891	658	S. 79 37 W.	.12½	S. 89½ E.	.03
		Summer	895	1752	780	1269	2399	2827	1017	1696	637	S. 33 31 W.	.17½	S. 23½ E.	.13½
		Autumn	1094	1654	551	825	1820	2170	1007	2493	817	N. 87 28 W.	.16	N. 18½ W.	.03
		Winter	1245	1574	527	791	1670	2258	1245	3400	893	N. 72 13 W.	.23½	N. 38 W.	.12
		The year	4569	7224	2978	4454	8364	10090	4945	11183	3533	S. 81 32 W.	.15		

[1] Computed from the resultants for the seasons.

(Nos. 139 to 143.) **Southeastern Virginia.**

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Bellona Arsenal,	Post Surgeon,	1	0	1832.
Cape Charles,	Jean G. Potts,	1	1	1867 and 1868.
Crichton's Store,	R. F. Astrop,	6	11	1854 to 1861 inclusive.
Gosport,	Mr. Patton,	0	8	1843 and 1845.
Heathsville,	J. C. Wills,	0	3	1849.
Johnsontown,	C. R. Moore,	1	9	1868 and 1869.
Montross,	Edward E. Spence,	2	6	1856 to 1859 inclusive.
Mulberry Hill,	R. Binford,	0	11	1869.
Norfolk,	U. S. Naval Hospital,	3	2	1843 and 1865 to 1869 inclusive.
Old Point Comfort,	Post Surgeon at Fortress Monroe,	28	0	1826 to 1854 inclusive, except 1845.
Portsmouth,	N. B. Webster & Naval Hospital,	7	3	1854 to 1861 inclusive, 1865 & 1866.
Prince George Court House,	....	0	3	1856.
Randolph Macon College,	....	0	1	January, 1869.
Richmond,	David Turner and others,[1]	3	0	1850 to 1854 inclusive, and 1860.
Rose Hill,	George W. Upshaw,	1	8	1855, 1857 and 1858.
Smithfield,	John J. Purdie,	4	1	1856 to 1861 inclusive.
Surry Court House,	Benjamin W. Jones,	2	8	1867, 1868 and 1869.
West Brunswick,	Mr. Astrop,	1	0	1843, 1844 and 1845.
Westwood,	Charles J. Meriwether,	0	11	1860 and 1861.
Williamsburg,	....	6	0	1772 to 1777 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
139. Bellona Arsenal.	Spring	3	16	5	13	4	22	13	13	...	S. 66° 50′ W.	.15		
	Summer	6	9	6	21	8	21	6	15	...	S. 16 1 W.	.16½		
	Autumn	9	12	4	9	8	25	16	8	...	S. 66 31 W.	.24½		
	Winter	6	12	6	19	1	15	15	17	...	N. 48 40 W.	.14		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 33 W.	.14		

[1] Charles J. Meriwether and John Appleyard. [2] Computed from the resultants for the seasons.

(Nos. 140 to 143.) **Southeastern Virginia.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
140. Old Point Comfort, 1826–1830.	January	29	33	9	9	1	28	16	30	...	N. 21° 33′ W.	.32		
	February	13	33	13	13	10	31	7	21	...	N. 9 55 E.	.07		
	March	14	36	7	22	5	43	16	12	...	S. 66 18 W.	.05		
	April	10	26	11	27	13	36	12	15	...	S. 1 16 E.	.12		
	May	3	43	13	36	11	28	14	6	...	S. 60 25 E.	.23		
	June	1	26	18	29	10	43	16	7	...	S. 8 37 E.	.25		
	July	0	29	10	30	7	68	7	4	...	S. 6 40 W.	.34		
	August	6	30	11	27	9	42	24	6	...	S. 14 9 W.	.17½		
	September	21	40	13	18	6	28	8	16	...	N. 34 1 E.	.18		
	October	17	39	9	14	4	28	17	27	...	N. 17 25 W.	.20		
	November	13	25	10	18	7	36	19	23	...	N. 85 3 W.	.14		
	December	17	32	7	11	8	46	13	21	...	N. 74 58 W.	.15		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 43 15 W.	.03		
141. Old Point Comfort, 1826–1863.	Spring	488	2067	1098	1152	717	2191	824	1102	...	S. 32 12 E.	.04		
	Summer	301	1899	1389	1330	758	2942	711	584	...	S. 15 10 E.	.18		
	Autumn	701	2348	969	895	457	1973	798	1497	...	N. 0 39 E.	.09½		
	Winter	880	1956	610	589	477	2080	1066	1919	...	N. 49 46 W.	.20		
	The year	2370	8270	4066	3966	2409	9186	3399	5102	...	N. 81 33 W.	.02		
142. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	314	141	89	119	319	396	157	192	...	S. 65 59 W.	.189	S. 2° W.	.02
	Summer	152	147	70	106	374	497	113	103	...	S. 37 49 W.	.279	S. 2 E.	.17
	Autumn	362	214	78	72	253	293	151	171	...	N. 58 14 W.	.142	N. 23 E.	.14
	Winter	315	129	42	64	254	310	185	173	...	N. 88 20 W.	.234	N. 44 W.	.09
	The year[2]	...	...	...	...	...	...	...	...	...	S. 72 48 W.	.183		
No. of miles.	Spring	1588	1064	457	582	1923	2508	1157	1667	...	S. 75 34 W.	.214	S. 42½ W.	.02
	Summer	777	753	335	410	1535	2368	432	410	...	S. 33 7 W.	.320	S. 3½ E.	.23
	Autumn	1587	1699	573	194	1040	1236	707	785	...	N. 9 51 W.	.162	N. 40 E.	.26
	Winter	1359	587	122	375	1136	1865	1316	1436	...	N. 88 36 W.	.343	N. 73½ W.	.16
	The year[2]	...	...	...	...	...	...	...	...	...	S. 81 11 W.	.197		
M'n vel. in miles p. h'r.	Spring	5.06	7.55	5.13	4.89	6.03	6.33	7.37	8.68					
	Summer	3.08	5.12	4.79	3.87	4.10	4.76	3.82	3.98					
	Autumn	4.38	7.94	7.35	2.69	4.11	4.22	4.68	4.59					
	Winter	4.31	4.55	2.90	5.86	4.47	6.02	7.11	8.30					
143. Aggregate number of observations at all stations. Surface wind.	Spring	1325	3758	1868	2125	1896	4759	2024	2676	669	S. 54 38 W.	.07		
	Summer	1383	3334	2191	2363	2127	5918	1623	1530	870	S. 10 14 W.	.15		
	Autumn	2206	3788	1697	1665	1446	3999	1736	3244	778	N. 37 4 W.	.10½		
	Winter	2406	3360	1038	1177	1553	4418	2346	3855	691	N. 63 10 W.	.21		
	The year	7320	14240	6794	7330	7022	19094	7729	11305	3008	S. 87 25 W.	.08½		
Motion of clouds.	Spring	127	200	56	62	102	747	749	367	...	S. 83 34 W.	.54	N. 65 W.	.02
	Summer	199	252	95	105	128	1035	901	365	...	S. 79 3 W.	.51	S. 25 E.	.03
	Autumn	144	207	79	89	100	644	506	346	...	S. 84 49 W.	.43½	N. 68½ E.	.09
	Winter	112	109	31	41	68	635	600	288	...	S. 82 11 W.	.59½	S. 82 W.	.07
	The year[2]	...	...	...	...	...	...	...	...	...	S. 82 20 W.	.52		
2 preceding combined.	Spring	1452	3958	1924	2187	1998	5506	2773	3043	669	S. 67 54 W.	.12	S. 28 E.	.04
	Summer	1582	3586	2286	2468	2255	6953	2524	1895	870	S. 32 42 W.	.17	S. 16½ E.	.14
	Autumn	2350	3995	1776	1754	1546	4643	2242	3590	778	N. 53 31 W.	.12	N. 23½ E.	.08½
	Winter	2518	3469	1069	1218	1621	5053	2946	4143	691	N. 69 59 W.	.24	N. 46 W.	.13
	The year	7902	15008	7055	7627	7420	22155	10485	12671	3008	S. 85 14 W.	.13		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.34	4.22	4.95	5.57	5.27
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.20	1.18	.70	1.30	.96
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.36	1.35	.80	1.91	1.04
Excess of the latter over the former	+.16	+.17	+.10	+.61	+.08

[2] Computed from the resultants for the seasons.

(Nos. 144 and 145.) **Eastern North Carolina.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Goldsboro',	E. W. Adams,	5	4	1856, 1857, 1858, 1860, 1861, 1867, 1868 and 1869.
Jackson,	Rev. Fred. Fitzgerald,	0	1	1854.
Lake Scuppernong,	Rev. J. A. Sheppard,	1	0	1851 and 1852.
Marlborough,	Robert H. Drysdale,	0	8	1858.
Mount Olive,	E. D. Pearsall,	0	3	1869.
Murfreesboro',	Rev. A. McDowell,	3	7	1856 to 1861 inclusive, except 1860.
Oxford,	William R. Hicks, M.D.,	2	11	1867, 1868 and 1869.
Scuppernong,	....	0	6	1853.
Thornbury,	Dan. Morelle,	0	11	1854 and 1855.
Wake Forest College,	Mr. White,	0	1	1843.
Warrenton,	Dr. W. M. Johnson,	0	5	1857.
Wilson,	E. W. Adams,	0	11	1866.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
144. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	75	116	73	58	124	201	155	90	...	S. 62° 18′ W.	.189	S. 34½° W.	.04
		Summer	25	63	29	32	73	137	33	24	...	S. 25 33 W.	.253	S. 12 E.	.18
		Autumn	74	120	45	55	63	102	111	103	...	N. 56 31 W.	.131	N. 16 E.	.13
		Winter	86	138	49	62	66	180	176	119	...	N. 81 10 W.	.193	N. 27½ W.	.09
		The year[2]	...	...	...	...	...	...	...	...	...	S. 69 39 W.	.154		
	No. of miles.	Spring	945	1270	459	434	1059	1699	1431.5	1279	...	N. 84 30 W.	.199	S. 76 W.	.05
		Summer	139	537	155	156	400	785	181	218	...	S. 32 0 W.	.162	S. 20 E.	.18
		Autumn	712	893	207	283	510	527	506	615	...	N. 21 33 W.	.149	N. 41 W.	.14
		Winter	847	1306	307	4205	583	1333	1581	1277	...	N. 65 52 W.	.234	N. 45 E.	.09
		The year[2]	...	...	...	...	...	...	...	...	...	N. 77 21 W.	.154		
	M'n vel. in miles p.h'r.	Spring	12.60	10.95	6.29	7.48	8.54	8.45	9.24	14.21					
		Summer	5.56	8.52	5.34	4.87	5.48	5.73	5.48	9.08					
		Autumn	9.62	7.44	4.60	5.15	8.10	5.17	4.56	5.97					
		Winter	9.85	9.46	6.27	6.78	8.83	7.41	8.98	10.73					
145. Aggregate number of observations at all stations.	Surface wind.	Spring	513	659	289	302	598	784	700	502	371	S. 87 8 W.	.13½		
		Summer	232	595	220	270	605	852	470	216	259	S. 33 34 W.	.19		
		Autumn	558	752	248	237	343	366	488	436	433	N. 9 44 W.	.16½		
		Winter	571	681	207	196	342	632	743	601	436	N. 55 1 W.	.22		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 74 48 W.	.11½		
	Motion of clouds.	Spring	155	146	62	50	120	270	832	204	...	N. 86 38 W.	.52½	N. 86½ W.	.09
		Summer	151	191	108	63	152	280	549	163	...	N. 89 19 W.	.35	S. 74 E.	.08
		Autumn	113	134	113	75	102	154	462	100	...	N. 87 49 W.	.30½	S. 84 E.	.12½
		Winter	121	166	36	34	82	215	744	146	...	N. 84 12 W.	.53½	N. 73½ W.	.11
		The year[2]	...	...	...	...	...	...	...	...	...	N. 86 37 W.	.43		
	2 preceding combined.	Spring	668	805	351	352	718	1054	1532	706	371	N. 89 16 W.	.24½	S. 68 W.	.08
		Summer	383	786	328	333	757	1132	1019	379	259	S. 58 49 W.	.21	S. 6 W.	.14
		Autumn	671	886	361	312	445	520	950	536	433	N. 37 13 W.	.16	N. 37 E.	.12
		Winter	692	847	243	230	424	847	1487	747	436	N. 54 12 W.	.18	N. 16 E.	.07½
		The year[2]	...	...	...	...	...	...	...	...	...	N. 79 23 W.	.17		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.61	6.18	6.32	8.64	7.69
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.82	1.56	.83	1.67	1.18
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.91	1.00	.94	2.02	1.18
Excess of the latter over the former	+.09	—.56	+.11	+.35	.00

[2] Computed from the results for the seasons.

(Nos. 146 and 147.) **Delaware.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Delaware Breakwater,	....	0	1	1849.
Delaware City,	L. Vankekle,	0	7	1866 and 1867.
Fort Delaware,	Post Surgeon,	5	2	1826 and 1854 to 1859 inclusive.
Milford,	R. A. Martin,	1	1	1857, 1858 and 1869.
Newark,	W. A. Norton & others,[2]	2	7	1843 to 1845 and 1854 to 1858, both inclusive.
Newcastle,[1]				
Wilmington,	Urban D. Hodges,	1	10	1864 and 1865.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
146. Fort Delaware.		Spring	19	37	9	60	19	69	10	78	...	S. 74° 46′ W.	.12½	N. 41° E.	.08
		Summer	3	12	5	18	14	27	5	8	...	S. 7 2 W.	.31½	S. 10½ E.	.20
		Autumn	29	43	10	42	19	97	41	120	...	N. 77 46 W.	.32	N. 75 E.	.19
		Winter	19	89	15	34	19	93	30	195	...	N. 49 52 W.	.35	N. 72 W.	.32
		The year[3]	...	...	...	...	...	...	...	...	...	S. 85 53 W.	.18½		
147. Aggregate.	Surface wind.	Spring	126	331	70	212	143	343	156	414	6	N. 63 42 W.	.15		
		Summer	61	157	122	126	214	347	137	236	3	S. 47 19 W.	.22		
		Autumn	118	232	94	135	127	358	266	488	39	N. 72 45 W.	.29		
		Winter	154	338	78	143	81	408	273	830	11	N. 55 7 W.	.38½		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 75 58 W.	.23		
	Motion of clouds.	Spring	35	25	42	13	24	20	78	33	...	N. 58 24 W.	.20		
		Summer	18	38	39	33	56	71	79	39	...	S. 49 49 W.	.24		
		Autumn	10	34	10	17	16	19	12	30	...	N. 23 9 W.	.10		
		Winter	27	3	9	2	16	7	76	22	...	N. 75 7 W.	.54		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 78 9 W.	.22½		
	The two combined.	Spring	161	356	112	225	167	363	234	447	6	N. 61 3 W.	.14½	N. 78 E.	.09
		Summer	79	195	161	159	270	418	216	275	3	S. 47 51 W.	.22½	S. 15 E.	.21
		Autumn	128	266	104	152	143	377	278	518	39	N. 74 52 W.	.26½	N. 59 W.	.04
		Winter	181	341	87	145	97	415	349	852	11	N. 56 52 W.	.39	N. 33½ W.	.19½

[1] Same as Fort Delaware, which see.
[2] Prof. E. D. Porter, Prof. W. A. Crawford, R. A. Martin, T. J. Craven, Mrs. E. D. Porter and Robert Crawford.
[3] Computed from the resultants for the seasons.

(No. 148.) **Delaware, Maryland and Eastern Virginia.**

Average result for each month of the year, computed from observations made at 14 different stations, for an aggregate period of 25⅓ years, previous to the year 1850.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
January	2.81	.02	4.73	.01	1.46	.00	2.49	.05	1.56	.03	4.69	.01	3.29	.08	8.82	.03	.92	N. 47° 47′ W.	.27	N. 20° W.	.18	31.00
February	1.78	.00	4.53	.00	1.36	.02	2.47	.07	1.44	.03	5.11	.03	2.46	.07	7.93	.04	.90	N. 56 32 W.	.21	N. 15½ W.	.12	28.24
March	2.05	.01	4.65	.00	2.28	.00	4.13	.01	2.19	.01	5.28	.02	2.92	.06	7.13	.05	.21	N. 64 25 W.	.12	N. 15 E.	.06	31.00
April	1.65	.00	4.61	.00	2.75	.00	4.13	.04	2.81	.00	5.14	.00	2.05	.01	6.81	.00	.00	N. 77 23 W.	.05	N. 75 E.	.06	30.00
May	1.15	.04	4.48	.00	2.32	.00	5.79	.04	4.05	.00	5.61	.00	2.50	.00	4.60	.03	.39	S. 1 29 W.	.14½	S. 41 E.	.18	31.00
June	1.10	.00	3.94	.01	2.30	.00	4.65	.01	3.42	.02	7.23	.00	2.58	.00	4.39	.00	.35	S. 26 26 W.	.18	S. 16 E.	.17	30.00
July	1.05	.01	3.75	.00	1.02	.00	4.69	.00	3.63	.00	9.37	.00	2.48	.00	4.97	.00	.03	S. 41 41 W.	.27	S. 10 W.	.19	31.00
August	1.85	.01	4.87	.00	1.61	.00	5.16	.01	3.07	.00	7.31	.00	2.63	.00	4.35	.01	.12	S. 31 20 W.	.13	S. 26 E.	.13	31.00
September	2.29	.00	5.90	.00	2.00	.00	3.51	.00	3.14	.00	6.07	.00	1.94	.00	4.79	.01	.35	S. 87 21 W.	.03	S. 88 E.	.10	30.00
October	2.07	.00	5.50	.00	1.73	.00	3.46	.00	2.65	.00	5.63	.02	2.55	.00	7.39	.00	.00	N. 55 33 W.	.12	N. 21 E.	.06	31.00
November	1.96	.00	3.96	00	1.41	.00	2.59	.01	2.32	.00	5.91	.00	3.01	.00	8.50	.04	.29	N. 70 58 W.	.25	N. 51 W.	.12	30.00
December	2.17	.00	4.88	.00	1.12	.03	2.55	.05	2.16	.00	5.98	.00	2.58	.00	9.40	.08	.00	N. 86 57 W.	.23	N. 85 W.	.10	31.00

(Nos. 149 to 152.) **Southeastern Pennsylvania.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Fort Mifflin,	Post Surgeon,	10	1	1823, 1824, 1843 to 1846 and 1849 to 1853, [all inclusive.
Franklin Institute, Philada.,	Mr. Hamilton and others,	5	0	1831 to 1841 inclusive.
Girard College, Philada.,	A. D. Bache,	5	0	July, 1840, to June, 1845, inclusive.
High School, Philadelphia,	Prof. J. A. Kirkpatrick,	15	4	1854 to 1869 inclusive.
Horsham,	Miss Anna Spencer,	5	5	1864 to 1869 inclusive.
Lima,	Joseph Edwards & others,[2]	5	7	1850 and 1854 to 1858 inclusive.
Naval Hospital, Philada.,	Officers in charge,	4	3	1849 and 1865 to 1869 inclusive.
Oxford,	Henry Duffield, M.D.,	0	5	1865.
Philadelphia,[1]	J. C. Martindale & others,[3]	8	4	1748, 1749, 1767 to 1772 inclusive, 1861, 1862 [and 1864.
Pocopson,	Fenelon Darlington,	15	8	1854 to 1869 inclusive.
West Chester,	Mr. Jeffries and others,[4]	2	9	1840, 1841, 1843, 1864, 1865, 1868 and 1869.
Westtown,	Samuel Alsop,	1	7	1857, 1858 and 1859.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
149. Fort Mifflin.	Spring	231	456	253	300	325	644	501	591	...	S. 87° 56′ W.	.18		
	Summer	103	367	210	459	362	790	310	344	...	S. 26 25 W.	.24		
	Autumn	183	422	155	270	200	559	364	558	...	N. 80 1 W.	.19		
	Winter	247	404	156	160	237	618	540	781	...	N. 73 1 W.	.32½		
	The year[6]	...	...	...	...	...	...	...	...	...	S. 83 6 W.	.20		
150. Franklin Institute.[5]	The year	127	358	194	330	369	655	1388	537	...	S. 75 4 W.	.45		
151. Surface wind.	Spring	1592	4283	1679	2800	1754	5882	3286	5928	249	N. 79 28 W.	.18½		
	Summer	1201	3269	1214	3566	2334	7704	2841	4269	383	S. 54 22 W.	.24		
	Autumn	1610	3850	1131	2582	1524	5777	3284	7099	490	N. 74 3 W.	.25½		
	Winter	1525	4058	1011	1686	1237	5555	4158	7819	422	N. 67 20 W.	.33½		
	The year	5928	15460	5035	10634	6849	24918	13569	25115	1544	N. 84 40 W.	.26		
Motion of clouds.	Spring	144	147	56	75	130	633	1111	782	...	N. 79 16 W.	.30	N. 78° E.	.24
	Summer	234	222	155	161	258	1119	1343	756	...	S. 83 57 W.	.53	S. 2 E.	.06
	Autumn	153	146	70	115	197	845	977	658	...	S. 85 4 W.	.56½	S. 32 W.	.06
	Winter	81	42	19	32	53	469	1073	669	...	N. 84 25 W.	.74½	N. 72½ W.	.22
	The year[6]	...	...	...	...	...	...	...	...	...	N. 89 24 W.	.53		
The two combined.	Spring	1736	4430	1735	2875	1884	6515	4397	6710	249	N. 80 58 W.	.23	N. 74 E.	.05
	Summer	1435	3491	1369	3727	2592	8823	4184	5025	383	S. 61 53 W.	.27½	S. 12 E.	.15
	Autumn	1763	3996	1201	2697	1721	6622	4261	7757	490	N. 78 17 W.	.28	N. 2 W.	.03½
	Winter	1606	4100	1030	1718	1290	6024	5231	8488	422	N. 70 7 W.	.36½	N. 34 W.	.12½
	The year	6540	16017	5335	11017	7487	27984	18073	27986	1544	N. 85 33 W.	.27		

[1] Exclusive of Franklin Institute, Girard College, High School and Naval Hospital.
[2] Mr. Miller and John H. Smedley.
[3] P. Friel, Homer Eachers and others.
[4] Samuel Alsop, Prof. A. G. Clark, T. H. Aldrich and Dr. George Martin.
[5] Number of days 2191.
[6] Computed from the resultants for the seasons.

(No. 152.) **Girard College.**

Time of the year.	North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.
January	179	13	115	4	201	11	275	28	90	10	53	3	59	2	38	19	87	39	191	50
February	151	9	138	14	131	17	175	10	82	2	54	5	39	10	27	26	117	37	196	57
March	166	8	155	19	121	24	265	18	128	12	57	9	57	33	57	18	141	43	268	66
April	130	18	147	27	164	53	370	45	240	7	86	11	78	13	76	11	102	42	213	49
May	184	14	142	26	100	28	153	18	88	13	67	14	86	17	112	7	161	49	250	65
June	123	22	79	16	78	25	114	42	84	29	65	33	87	28	70	53	160	37	286	51
July	133	58	95	31	107	17	151	45	46	15	41	15	81	36	91	46	253	55	337	104
August	78	21	66	23	175	50	196	46	154	42	95	27	140	43	138	41	224	69	220	46
September	180	45	132	46	143	58	195	35	125	11	56	13	86	15	76	49	121	84	210	58
October	112	41	91	22	130	39	94	39	65	8	60	4	47	21	95	32	126	74	166	83
November	117	47	80	72	167	46	137	60	70	17	44	3	54	21	35	12	67	51	94	30
December	125	54	152	31	154	43	158	27	80	13	44	5	39	0	22	12	43	20	132	44
Spring	480	40	440	72	385	105	788	81	456	32	210	34	221	63	245	36	404	134	731	180
Summer	334	101	240	70	360	92	461	133	284	86	201	75	308	107	299	140	637	161	843	201
Autumn	409	133	303	140	440	143	426	134	260	36	160	20	187	57	206	93	314	209	470	171
Winter	455	76	405	49	486	71	608	65	252	25	151	13	137	12	87	57	247	96	519	151
The year	1678	350	1392	331	1671	411	2283	413	1252	179	722	142	853	239	837	326	1602	600	2563	703

Time of the year.	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
January	177	35	116	15	227	21	366	46	400	18	239	10	N. 49° 20′ W.	.29½	N. 9° W.	.13
February	170	29	158	21	147	78	455	42	277	6	200	9	N. 65 47 W.	.32½	N. 52 W.	.12
March	218	20	137	20	166	20	316	34	309	48	217	12	N. 64 28 W.	.20	N. 30 E.	.03
April	272	17	91	20	90	45	201	20	241	29	175	10	N. 6 55 E.	.08	N. 85 E.	.21
May	458	41	179	23	132	15	207	29	245	25	183	34	S. 78 36 W.	.23	S. 15 W.	.11
June	462	70	256	12	158	23	170	38	159	22	148	40	S. 58 5 W.	.29	S. 11½ W.	.21
July	342	64	146	28	121	27	149	35	168	30	180	49	S. 58 38 W.	.27	S. 9 W.	.20
August	212	54	143	41	114	29	197	30	211	59	127	52	S. 30 53 W.	.10	S. 45 E.	.21
September	211	10	83	54	107	21	164	48	310	58	205	79	N. 42 10 W.	.16	N. 56 E.	.11
October	258	17	148	25	198	36	245	58	407	127	188	58	N. 71 50 W.	.31	N. 65 W.	.10
November	230	36	131	47	212	106	356	97	371	57	204	35	N. 54 15 W.	.36	N. 31 W.	.18
December	401	34	152	43	224	123	226	119	330	79	217	27	N. 60 30 W.	.36	N. 43 W.	.16
Spring	948	78	407	63	388	80	724	83	595	102	575	56	N. 73 30 W.[1]	.14	S. 87½ E.	.07
Summer	1016	188	545	81	393	79	516	103	538	111	455	141	S. 54 ... W.[1]	.22	S. 8½ E.	.19
Autumn	699	63	362	126	517	163	765	203	1088	242	597	172	N. 58 30 W.[1]	.27½	N. 19 W.	.09
Winter	748	98	426	79	598	222	1047	207	1007	103	656	46	N. 59 ... W.[1]	.21	N. 32 W.	.12
The year	3411	427	1740	349	1896	544	2962	596	3428	558	2283	415	N. 74 5 W.	.21		

[1] Computed from the resultants of the months by plotting.

(Nos. 153 to 157.) **Southern New Jersey.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Cape May,	Mr. Merrill,	0	5	1843 and 1844.
Elwood,	J. S. Fritts,	0	1	1867.
Greenwich,	Clarkson Sheppard and Miss R. C. Sheppard,	6	0	1864 to 1869 inclusive.
Haddonfield,	John Clement, Jr., and Samuel Wood,	6	6	1843, 1844, 1849 and 1864 to 1869 inclusive.
Moorestown,	S. C. Thornton and others,[1]	4	10	1859, 1861 and 1864 to 1869 inclusive.
Newfield,	E. D. Couch,	2	2	1867, 1868 and 1869.
Rio Grande,	Jerusha R. Palmer,	1	5	1868 and 1869.
Salem,	C. M. Dodd and Geo. Watson,	0	2	1856.
Seaville,	Barker Cole and E. C. Cole,	1	11	1865 to 1868 inclusive.
Vineland,	John Ingram, M.D.,	2	5	1867 to 1869 inclusive.
Woodstown,	George Watson,	0	1	1860.

[1] Miss E. E. Thornton and Thomas J. Beans.

(Nos. 153 to 155.) **Southern New Jersey.**—*Continued.*

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
153. Surface winds.	Spring	436	907	521	606	718	1216	549	1529	308	N. 80° 24′ W.	.13½		
	Summer	373	789	456	682	784	1654	497	796	484	S. 37 54 W.	.18½		
	Autumn	507	804	412	600	567	1383	644	1580	495	N. 80 30 W.	.19½		
	Winter	463	734	345	342	431	1152	779	1845	360	N. 65 58 W.	.30½		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 21 W.	.18		
154. Motion of clouds.	Spring	52	174	80	98	48	439	229	466	...	N. 82 40 W.	.38	N. 23½° E.	.03½
	Summer	30	223	62	134	60	555	221	294	...	S. 73 21 W.	.33½	S. 31 E.	.13
	Autumn	63	211	53	117	45	456	272	421	...	N. 84 23 W.	.37½	N. 38½ E.	.03
	Winter	42	136	38	51	49	366	265	432	...	N. 81 24 W.	.48	N. 57 W.	.10
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 42 W.	.39		
155. The two combined.	Spring	488	1081	601	704	766	1655	778	1995	308	N. 81 18 W.	.18	N. 64 E.	.04½
	Summer	403	1012	518	816	844	2209	718	1090	484	S. 48 36 W.	.20½	S. 24 E.	.16
	Autumn	570	1015	465	717	612	1839	916	2001	495	N. 81 42 W.	.23	N. 19 W.	.02½
	Winter	505	870	383	393	480	1518	1044	2277	360	N. 69 51 W.	.33½	N. 42 W.	14
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 22 W.	.22		.

[1] Computed from the resultants for the seasons.

(No. 156.) **Delaware, Southeastern Pennsylvania and Southern New Jersey.**

Average monthly results, computed from observations made at forty different stations, for an aggregate period of forty-eight years and eleven months, previous to the year 1850.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm.			
January	1.17	.47	2.53	.28	1.97	.11	2.73	.17	1.26	.30	4.49	.44	5.41	.79	5.97	.27	2.64	N. 80° 52′ W.	.28	31
February	1.13	.24	1.94	.17	1.45	.14	2.02	.06	1.04	.15	4.31	.53	4.94	.57	6.42	.31	2.58	N. 78 5 W.	.38	28
March	1.72	.49	2.27	.15	1.85	.11	2.36	.12	1.62	.32	4.63	.51	5.45	.61	5.66	.18	2.95	N. 82 58 W.	.30	31
April	1.63	.45	2.56	.18	2.19	.9	3.04	.23	2.20	.35	4.29	.35	4.64	.58	5.01	.34	1.87	S. 89 9 W.	.20	30
May	1.16	.28	1.83	.21	1.34	.19	2.61	.29	1.96	.54	4.84	.37	4.97	.70	6.29	.54	2.88	S. 88 45 W.	.33	31
June	1.24	.10	1.61	.11	1.47	.20	2.45	.13	2.03	.27	4.88	.45	5.20	.59	5.18	.30	3.79	S. 83 31 W.	.33	30
July	1.21	.19	1.41	.11	1.46	.11	1.91	.27	2.01	.44	5.12	.54	6.52	.93	4.89	.22	3.66	S. 82 32 W.	.41	31
August	1.13	.22	1.91	.14	2.18	.36	2.78	.25	2.59	.18	4.97	.34	5.42	.63	3.55	.19	4.16	S. 64 10 W.	.26	31
September	1.47	.18	1.43	.15	2.05	.10	1.98	.34	2.20	.23	3.84	.33	5.33	.63	5.45	.37	3.92	N. 89 3 W.	.31	30
October	1.39	.12	1.53	.05	1.58	.15	2.42	.13	1.78	.37	4.40	.48	6.00	.55	6.44	.45	3.16	N. 88 24 W.	.37	31
November	1.48	.14	1.55	.18	1.96	.05	1.84	.09	1.30	.19	3.76	.47	6.84	.74	6.19	.43	2.79	N. 79 3 W.	.39	30
December	1.64	.28	2.03	.11	1.71	.06	1.89	.10	1.26	.21	4.36	.77	6.39	.85	6.60	.24	2.50	N. 79 10 W.	.44	31

(No. 157.) **Delaware, Southeastern Penn. and Southern N. Jersey.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
157. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[1]	No. of observations.	Spring	242	449	139	232	197	580	398	837	...	N. 64° 0′ W.	.267	N. 14° E.	.03
		Summer	175	432	162	292	284	753	352	556	...	S. 76 13 W.	.189	S. 23 E.	.15
		Autumn	264	480	149	241	221	699	421	832	...	N. 70 5 W.	.242	S. 70 E.	.02
		Winter	211	490	113	130	108	527	617	1019	...	N. 58 40 W.	.392	N. 37½ W.	.14
		The year[2]	...	...	...	...	...	...	...	...	...	N. 70 0 W.	.262		
	No. of miles.	Spring	2602	3267	668	1273	1369	3702	3057	9364	...	N. 51 42 W.	.401	N. 27 E.	.07
		Summer	733	1526	653	1267	1294	3977	1613	3308	...	S. 78 23 W.	.268	S. 20 E.	.25
		Autumn	2156	2663	666	1258	1631	4347	2681	7652	...	N. 63 29 W.	.334	S. 58½ E.	.05½
		Winter	1916	2728	527	526	553	2732	4840	12445	...	N. 52 44 W.	.560	N. 32 W.	.18½
		The year[2]	...	...	...	...	...	...	...	...	...	N. 59 40 W.	.393		
	Mean vel. in miles per hour.	Spring	10.75	7.28	4.81	5.49	6.95	6.38	7.68	11.19					
		Summer	4.19	3.53	4.03	4.34	4.56	5.28	4.58	5.95					
		Autumn	8.17	5.55	4.47	5.22	7.38	6.22	6.37	9.20					
		Winter	9.08	5.57	4.66	4.05	5.12	5.18	7.84	12.21					

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.23	4.78	6.97	8.20	7.04
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.20	.90	1.69	3.21	1.85
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	3.30	1.28	2.33	4.59	2.77
Excess of the latter over the former	+1.10	+.38	+.64	+1.38	+.92

[2] Computed from the resultants for the seasons.

(Nos. 158 to 168.) **Atlantic Ocean**, longitude 25° to 75° west.

Computed from observations for an aggregate period of over 18 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
158. Long. 70° to 75° W.	Spring	131	95	127	72	96	44	68	43	133	79	195	85	125	60	132	86	44	N. 72° 56′ W.	.11	S. 1½° W.	.03	538
	Summer	77	41	91	43	70	27	94	51	95	73	154	60	83	22	43	31	45	S. 13 27 W.	.15	S. 18½ E.	.21½	357
	Autumn	76	40	94	47	45	27	24	26	39	21	60	23	73	41	67	38	23	N. 6 52 W.	.17	N. 37 E.	.14	254
	Winter	98	54	53	20	44	20	33	13	53	29	78	60	94	82	139	56	32	N. 54 33 W.	.31	N. 50 W.	.19	319
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 34 W.	.12	....	...	1468
159. Long. 65° to 70° W.	Spring	73	48	76	26	49	18	57	37	60	52	112	56	123	58	92	51	31	N. 82 38 W.	.19	S. 66½ E.	.04	340
	Summer	56	40	74	24	52	24	39	22	85	53	181	64	84	37	67	22	62	S. 59 25 W.	.21	S. 17 E.	.15½	329
	Autumn	38	24	45	15	27	11	23	18	24	7	58	44	43	44	67	15	23	N. 64 34 W.	.22	N. 28½ E.	.06	175
	Winter	34	13	24	10	10	7	17	12	28	16	25	18	50	62	58	26	8	N. 65 5 W.	.35	N. 41 W.	.14	139
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 51 W.	.23	....	...	983
160. Long. 60° to 65° W.	Spring	44	24	33	14	19	12	9	18	31	22	67	39	67	43	50	21	21	N. 80 48 W.	.29	N. 63½ W.	.04	178
	Summer	49	22	40	9	19	15	19	30	49	45	127	69	86	27	41	17	30	S. 65 32 W.	.34	S. 19½ W.	.18	231
	Autumn	34	26	38	15	17	5	21	18	33	19	34	24	37	28	50	16	10	N. 61 43 W.	.17	N. 62½ E.	.11	142
	Winter	18	14	23	6	10	19	6	13	10	10	32	16	40	40	55	21	6	N. 60 30 W.	.31	N. 9 W.	.12½	113
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 35 W.	.25	....	...	664

[1] Computed from the resultants for the seasons.

(Nos. 161 to 168.) **Atlantic Ocean.**—*Continued.*

Place of observation	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days
161. Long. 55° to 60° W.	Spring	29	23	28	17	18	5	26	23	30	25	59	25	37	28	40	28	20	S. 86° 51′ W.	.18	N. 69½°E.	.08	154
	Summer	33	21	25	7	25	13	29	27	67	54	126	61	96	21	19	9	23	S. 48 14 W.	.40	S. 14 W.	.22½	219
	Autumn	24	16	35	9	15	6	11	14	27	15	41	21	30	24	26	26	13	N. 74 2 W.	.18	N. 37 E.	.12	117
	Winter	17	15	13	5	11	8	11	14	14	21	32	30	38	15	49	19	2	N. 85 7 W.	.32	N. 44 W.	.11	105
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 19 W.	.25	....	...	595
162. Long. 50° to 55° W.	Spring	25	19	12	31	2	14	15	28	24	53	24	28	12	50	22	22	20	S. 69 12 W.	.17	N. 7 W.	.12	134
	Summer	10	25	21	21	19	27	26	51	54	134	84	95	33	38	13	24	28	S. 32 46 W.	.40	S. 25 W.	.17½	234
	Autumn	12	24	16	10	16	28	26	44	37	40	26	14	26	13	7	23	9	S. 5 33 E.	.24	S. 70 E.	.18	124
	Winter	7	13	15	17	2	18	14	23	20	22	24	36	16	38	18	27	10	S. 75 36 W.	.21	N. 26 W.	.14	107
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 30 W.	.23	....	...	599
163. Long. 45° to 50° W.	Spring	10	9	5	16	0	3	6	22	35	37	20	29	20	25	15	16	8	S. 53 39 W.	.35	N. 57 W.	.07½	92
	Summer	8	17	9	24	12	19	30	55	52	146	62	82	24	33	14	29	20	S. 29 41 W.	.44	S. ½ E.	.13½	212
	Autumn	19	15	9	10	6	16	13	40	39	33	15	34	25	23	5	17	10	S. 30 49 W.	.26	N. 75 E.	.08½	110
	Winter	2	8	5	12	2	8	3	22	14	19	11	26	9	21	5	19	0	S. 55 16 W.	.26	N. 2½ E.	.10	62
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 18 W.	.33	....	...	476
164. Longitude 45° to 75° W.	January	53	23	37	20	24	33	23	32	67	45	76	68	98	83	117	45	11	N. 86 22 W.	.32	N. 74 W.	.14	285
	February	58	44	49	23	29	7	27	22	35	25	65	40	50	91	85	38	29	N. 56 24 W.	.28	N. 16 W.	.18	239
	March	116	41	56	35	67	21	41	47	90	66	131	76	153	126	164	83	42	N. 76 10 W.	.29	N. 48 W.	.13	452
	April	91	90	105	62	51	36	45	44	92	92	155	83	114	68	123	85	65	N. 75 6 W.	.16	N. 25 E.	.06½	467
	May	105	87	120	79	66	39	95	80	131	110	191	103	117	70	64	56	37	S. 43 3 W.	.12	S. 55½ E.	.12½	517
	June	93	67	78	48	64	43	53	83	142	204	258	118	138	87	102	47	37	S. 50 40 W.	.29½	S. 15 W.	.17½	554
	July	80	41	84	39	77	42	92	63	136	198	308	223	175	62	57	38	114	S. 45 2 W.	.36	S. 16½ W.	.25	610
	August	60	58	98	41	56	40	62	91	124	103	168	90	93	29	38	47	57	S. 24 1 W.	.21	N. 30½ W.	.20	418
	September	74	62	92	40	38	50	44	54	67	54	100	55	81	37	55	28	39	S. 68 4 W.	.05	East.	.13½	323
	October	69	55	95	43	60	27	47	67	84	35	48	39	68	48	80	31	27	N. 11 32 E.	.04	N. 73 E.	.20	308
	November	60	28	50	23	28	16	27	33	47	46	86	66	85	88	87	76	22	N. 76 40 W.	.30	N. 51½ W.	.14	291
	December	65	50	47	27	26	40	34	43	37	47	61	78	99	102	122	85	18	N. 64 30 W.	30	N. 30½ W.	.17	327
	The year	924	646	911	480	586	394	590	664	1052	1025	1647	1039	1271	891	1094	659	498	S. 84 0 W.	.18½	....	...	4791
165. Long. 40° to 45° W.	Spring	8	17	12	12	12	12	21	20	26	34	21	35	14	19	9	9	5	S. 24 45 W.	.25	N. 41 W.	.08½	95
	Summer	8	26	23	26	8	20	39	51	45	94	74	98	21	38	12	18	18	S. 31 32 W.	.39	S. 46 W.	.06	206
	Autumn	6	10	0	3	11	31	14	35	22	58	21	39	6	19	12	12	17	S. 18 54 W.	.36	S. 42 E.	.06	107
	Winter	4	3	2	4	3	13	8	11	14	29	12	20	8	25	6	14	4	S. 40 25 W.	.33	N. 54 W.	.06½	60
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 28 58 W.	.33	....	...	468
166. Long. 35° to 40° W.	Spring	4	9	5	23	5	14	14	27	19	25	19	18	4	12	4	18	11	S. 2 5 E.	.23	N. 79 E.	.04½	77
	Summer	26	50	27	44	22	31	30	51	43	86	46	92	57	39	26	25	32	S. 43 42 W.	.20	N. 47½ W.	.14	242
	Autumn	9	14	10	8	13	14	12	25	16	25	17	9	5	18	6	9	5	S. 6 32 E.	.18	N. 42½ E.	.14½	75
	Winter	1	8	2	3	3	7	12	20	5	20	13	5	6	9	1	1	2	S. 4 46 W.	.41	South.	.17	39
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 8 35 W.	.24	....	...	433
167. Long. 30° to 35° W.	Spring	8	13	8	13	4	8	5	8	12	15	7	7	4	11	10	10	4	N. 23 23 W.	.03	N. 10 E.	.16½	49
	Summer	18	24	20	60	22	31	35	93	63	137	46	119	33	52	16	17	48	S. 22 53 W.	.36	S. 27 W.	.22	278
	Autumn	20	27	13	18	20	19	11	14	14	27	21	19	10	21	13	18	9	N. 13 12 W.	.02	N. 13 E.	.16	98
	Winter	1	9	1	2	4	11	12	12	8	21	6	7	3	8	2	10	6	S. 0 45 W.	.27	S. 15 E.	.14	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 16 11 W.	.14	....	...	446
168. Long. 25° to 30° W.	Spring	6	21	5	7	6	7	6	9	5	20	6	20	13	13	13	13	18	N. 77 46 W.	.17	N. 14 E.	.10	63
	Summer	21	74	28	40	28	32	13	64	49	101	47	142	53	58	25	54	62	S. 60 44 W.	.22	S. 3 W.	.05	297
	Autumn	8	10	3	6	3	4	5	9	32	13	17	25	8	10	3	9	12	S. 41 14 W.	.32	S. 5½ W.	.18½	59
	Winter	7	8	2	7	0	3	3	10	6	3	8	10	6	7	7	14	7	N. 66 37 W.	.19	N. 7 E.	.13½	36
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 72 31 W.	.20	....	...	455

[1] Computed from the resultants for the seasons.

(Nos. 169 to 175*b*.) **Azores.**

Observed hourly from 6 o'clock A. M. till 9 o'clock P. M. (excepting Angra and Delgada), under direction of Consul-General Hunt, on the following islands, viz.:—

Angra, for six years, 1865–70 (three times a day only).

Delgada, for six years, 1865–70 (three times a day only).

Fayal, during the months of June and July, 1840; also at Horta, on this island, by S. W. Dabney, from November, 1862, to October, 1857, inclusive.

Graciosa, during the first twelve days of June, 1840.

St. Mary's, from July 22 to 31, 1840.

St. Michael's, during the months June and July, 1840; also, during the years 1860 to 1869 inclusive.[1]

Terceira, during the same two months.

[1] These latter observations, from 1860 to 1869 inclusive, are quoted by Dr. Buchan, from the Reports of the British Association. The name of the observer is not given.

(Nos. 169 to 175(a).) **Azores.**—*Continued.*

Name of the Place.	North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.
169. St. Michael's, 1840	60	13	93	0	122	0	28	0	67	0	11	0	23	0	29	0	42	0	72	0
170. Terceira, "	79	0	35	0	58	0	8	0	47	0	14	0	21	0	0	0	28	0	62	0
171. Fayal, "	106	0	12	0	275	0	13	0	8	0	10	0	105	0	18	4	73	0	31	0
172. Graciosa, "	47	7	0	0	0	0	13	0	7	0	0	0	8	10	6	0	6	0	0	0
173. St. Mary's, "	14	0	10	0	45	0	12	0	6	0	15	0	0	0	0	0	15	0	2	0
174. Aggregate, "	306	20	150	0	500	0	74	0	135	0	50	0	157	10	53	4	164	0	167	0

	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
169. St. Michael's, 1840	67	0	43	20	60	4	49	4	100	0	33	5	5	N. 26° 8′ W.	.18	61
170. Terceira, "	114	0	63	0	198	0	92	0	108	0	32	0	0	N. 77 45 W.	.42	61
171. Fayal, "	168	0	22	0	52	0	16	0	41	0	2	0	21	N. 73 17 E.	.07	61
172. Graciosa, "	7	0	0	0	0	0	0	14	0	4	0	35	0 }	....	...	12
173. St. Mary's "	15	0	0	0	0	0	0	0	25	0	0	0	1 }	....	...	10
174. Aggregate, "	371	0	128	20	310	4	157	18	274	4	67	40	27	N. 45 5 W.	.16	205

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
174(a). Angra.	Spring	9	10	10	9	6	14	27	15	...	N. 79° 37′ W.	.24½			
	Summer	8	13	10	10	6	12	30	11	...	N. 80 17 W.	.20			
	Autumn	9	11	13	7	7	15	24	14	...	N. 77 38 W.	.19			
	Winter	9	10	11	8	6	16	26	14	...	N. 82 45 W.	.24			
	The year	35	44	44	34	25	57	107	54	...	N. 80 11 W.	.22			
175. St. Michael's, 1860–9.	January	1	8	1	4	3	6	1	6	0					
	February	1	6	1	4	1	7	1	7	0					
	March	1	7	1	3	2	9	2	6	0					
	April	1	9	2	2	1	4	2	8	0					
	May	2	10	1	3	1	4	2	8	0					
	June	1	10	1	3	1	4	2	8	0					
	July	2	13	1	3	0	5	2	5	0					
	August	0	15	0	5	0	3	2	5	1					
	September	1	12	1	5	0	3	1	6	1					
	October	2	10	1	4	2	4	1	5	1					
	November	3	7	0	4	2	7	1	6	0					
	December	3	8	2	4	2	5	2	7	0					
	Spring	4	26	4	8	4	17	6	22	0	N. 18 47 W.	.19			
	Summer	3	38	2	11	1	12	6	18	1	N. 20 19 E.	.29			
	Autumn	6	29	2	13	4	14	3	17	2	N. 23 45 E.	.19			
	Winter	5	22	4	12	6	18	4	20	0	N. 20 49 W.	.09			
	The year	18	115	12	44	15	61	19	77	3	N. 5 50 E.	.18			
175.(a) Delgada.	January	4	4	2	2	3	7	5	4	0					
	February	3	5	3	3	5	4	3	2	0					
	March	4	7	3	4	4	2	3	4	0					
	April	5	5	1	2	5	4	4	4	0					
	May	6	4	0	1	2	5	7	6	0					
	June	4	8	1	3	4	3	4	1	2					
	July	6	9	1	2	2	3	5	2	1					
	August	5	12	2	2	1	3	3	3	0					
	September	6	7	1	2	2	4	4	3	1					
	October	4	7	2	4	4	4	3	3	0					
	November	5	6	2	2	5	4	4	2	0					
	December	5	6	2	2	3	6	4	3	0					
	Spring	15	16	4	7	11	11	14	14	0	N. 42 19 W.	.18			
	Summer	13	29	4	7	7	9	12	6	3	N. 19 27 E.	.23			
	Autumn	15	20	5	8	11	12	11	8	1	N. 2 1 W.	.16			
	Winter	12	15	7	7	11	17	12	9	0	N. 82 45 W.	.01			
	The year	55	80	20	29	40	49	49	37	4	N. 16 39 W.	.12			

(Nos. 175(*a*) to 175(*b*).) **Azores.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
175(*a*). Horta Fayal.[1] Number of observations.	Surface wind.	Spring	20	59	16	14	9	78	19	27	25	N. 63° 31′ W.	.10½		
		Summer	18	51	5	19	26	68	20	8	58	S. 34 41 W.	.12½		
		Autumn	35	48	25	43	30	44	14	8	20	S. 66 19 E.	.16		
		Winter	29	74	15	22	53	36	15	9	17	S. 80 3 E.	.13½		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 38 20 E.	.04½		
	Motion of clouds.	Spring	17	45	13	9	6	69	20	33	...	N. 74 58 W.	.20		
		Summer	33	25	5	14	25	62	31	14	...	S. 70 52 W.	.26		
		Autumn	18	21	16	4	14	33	22	14	...	N. 83 11 W.	.15½		
		Winter	16	43	2	5	31	23	4	15	...	N. 39 1 E.	.06		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 0 W.	.14		
	The two combined.	Spring	43	104	29	23	15	147	39	60	...	N. 70 21 W.	.15½	N. 52½° W.	.12
		Summer	51	76	10	33	51	130	51	22	...	S. 57 11 W.	.20	S. 46½ W.	.15½
		Autumn	53	69	41	47	44	77	36	22	...	S. 49 58 E.	.06	S. 80 E.	.09
		Winter	45	117	17	27	84	59	19	24	...	S. 89 51 E.	.10½	N. 81 E.	.15
		The year[2]	...	...	...	...	...	...	...	...	...	S. 60 30 W.	.05		
175(*b*). Horta Fayal.[1] Surface wind in the years 1856 and 1857.	No. of miles.	Spring	302	687	106	270	141	1181	263	333	...	S. 75 22 W.	.16		
		Summer	248	390	12	180	235	889	144	54	...	S. 42 42 W.	.21½		
		Autumn	346	629	255	843	368	462	174	42	...	S. 58 26 E.	.26½		
		Winter	305	1172	252	277	843	515	305	249	...	S. 77 48 E.	.10½		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 13 12 E.	.08½		
	M'n vel. in miles p. h'r.	Spring	11.62	11.64	6.62	19.29	15.67	15.13	13.84	12.33					
		Summer	13.78	7.65	2.40	9.47	9.04	13.07	7.20	6.75					
		Autumn	9.89	13.10	10.20	19.60	12.27	10.50	12.43	5.25					
		Winter	10.52	15.84	16.80	12.59	15.91	14.31	20.33	27.67					

[1] From the preceding tables we obtain the following summary of results:—

	Spring.	Summer.	Autumn	Winter.	The year.
Average velocity of all winds in miles per hour	13.24	10.01	12.63	15.49	12.84
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity.	1.39	1.24	2.00	2.11	.59
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above.	2.09	2.14	3.36	1.63	1.08
Excess of the latter over the former	+.70	+.90	+1.36	—.48	+.49

[2] Computed from the resultants for the seasons.

(Nos. 176 to 180.) **Atlantic Ocean,** longitude 0° to 25° W.

Computed from observations for an aggregate period of over two years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory under the direction of Capt. M. F. Maury, Superintendent.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
176. Longitude 20° to 25° W.	Spring	7	24	19	4	3	2	1	1	2	10	4	6	6	5	6	7	0	N. 4° 29′ E.	.30	N. 25° E.	.32	36
	Summer	8	8	5	12	2	3	9	4	10	31	14	19	4	14	10	19	8	S. 72 44 W.	.23	S. 55 W.	.14	60
	Autumn	10	8	1	13	3	4	2	7	20	6	18	1	10	7	1	11	4	S. 43 13 W.	.12	S. 16 E.	.10	42
	Winter	1	11	9	9	1	3	3	6	18	12	5	16	6	10	4	9	5	S. 60 15 W.	.16	S. 18½ W.	.09½	43
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 23 W.	.11	....	...	181

[1] Computed from the resultants for the seasons.

(Nos. 177 to 180.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
177. Longitude 15° to 20° W.	Spring	15	25	15	8	5	1	1	0	3	3	5	14	5	13	13	14	1	N. 13° 22′ W.	.46	N. 5° W.	.25	47
	Summer	13	23	21	8	3	2	3	9	5	9	9	9	11	24	7	18	2	N. 24 2 W.	.30	N. 31 W.	.07	59
	Autumn	4	19	16	21	9	6	4	4	5	9	11	10	10	8	2	6	3	N. 41 41 E.	.16	S. 63½ E.	.21	49
	Winter	10	8	11	9	5	5	2	11	14	10	9	26	9	17	14	11	7	N. 86 51 W.	.22	S. 33 W.	.24½	59
	The year[1]	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	N. 21 52 W.	.23	....	..	214
178. Longitude 10° to 15° W.	Spring	15	15	5	8	2	7	1	5	13	22	22	22	20	20	19	16	8	N. 85 24 W.	.34	S. 64 W.	.24	73
	Summer	25	30	12	6	1	2	0	2	2	4	4	5	3	15	3	15	1	N. 3 38 W.	.56	N. 12 W.	.44	43
	Autumn	8	13	1	16	1	13	10	11	4	8	3	12	3	4	5	5	3	S. 76 59 E.	.14	S. 58½ E.	.30½	40
	Winter	10	5	7	10	3	1	5	8	3	13	20	20	9	9	8	12	4	S. 83 15 W.	.26	S. 40 W.	.21	49
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 43 52 W.	.18	....	...	205
179. Longitude 0° to 10° W.	Spring	11	6	13	13	14	5	13	1	3	5	3	7	32	2	7	11	12	N. 4 43 W.	.14	S. 44 W.	.04½	53
	Summer	8	23	7	9	19	19	6	0	5	0	7	9	16	6	14	6	15	N. 27 29 E.	.20	N. 84 E.	.07½	56
	Autumn	8	10	13	9	8	4	0	0	4	0	8	8	10	1	10	3	3	N. 1 52 E.	.26	N. 5 W.	.09	33
	Winter	4	4	5	4	10	6	3	6	2	2	2	4	18	1	2	11	0	N. 11 58 W.	.09	S. 24½ W.	.09	28
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 6 5 E.	.17	....	...	170
180. Longitude 0° to 45° W.[2]	January	24	31	17	30	13	23	24	39	41	76	47	64	43	51	20	44	18	S. 57 13 W.	.24½	S. 76 W.	.10½	202
	February	3	3	1	2	4	7	3	4	4	6	12	9	9	7	4	3	3	S. 55 7 W.	.30	S. 65½ W.	.15½	28
	March	8	21	17	9	9	10	11	7	18	22	15	11	10	21	12	11	9	S. 79 21 W.	.07	N. 20½ E.	.10	74
	April	20	38	30	18	18	18	19	25	33	37	25	36	47	25	15	17	8	S. 72 57 W.	.10	N. 7 E.	.08	143
	May	46	71	35	61	24	28	32	39	31	75	47	82	41	49	54	70	42	N. 64 44 W.	.12	N. 1 W.	.15½	276
	June	30	63	45	52	35	45	67	60	49	82	73	114	57	89	48	51	37	S. 56 51 W.	.16	N. 55½ W.	.03½	332
	July	50	141	60	63	51	60	46	148	98	231	101	254	92	102	42	78	101	S. 45 33 W.	.24	S. 48 W.	.09	573
	August	47	54	38	90	19	35	22	66	75	149	73	115	49	55	23	43	48	S. 37 22 W.	.20	S. 17 W.	.05½	334
	September	47	74	34	63	28	26	18	55	39	89	57	66	42	31	18	37	25	S. 44 38 W.	.07	N. 45 E.	.08	250
	October	26	34	19	15	36	39	20	30	60	36	44	36	15	43	30	29	22	S. 26 48 W.	.11	N. 79½ E.	.05½	178
	November	0	9	4	16	4	30	20	20	28	21	15	21	5	14	4	7	9	S. 9 30 E.	.35	S. 34½ E.	.29	76
	December	11	22	21	16	12	19	21	41	25	28	16	35	13	28	20	35	14	S. 40 56 W.	.09	N. 49½ E.	.06	126
	The year	312	561	321	435	253	340	303	534	501	852	525	843	423	515	290	425	336	S. 44 26 W.	.15	....	...	2590

[1] Computed from the resultants for the seasons.
[2] Serial Numbers 165 to 168 and 176 to 179 inclusive.

(Nos. 181 to 197.) **Portugal and Spain,** south of latitude 40°.

Observed as follows :—

Albacete, Spain, by Rafael Chamorro, during the years 1866 to 1868 inclusive.

Alicante, Spain, by Pedro Tomas Guillen, during the years 1866 to 1868 inclusive.

Badajos, Spain, by Rafael Tambrano y Rubia, in the year 1868, by Valerian, 1867, and by Ordonez, 1866.

Campo Major, Portugal, in the years 1864–70.

Ciudad Real, Spain, by José Maria Perez, during the years 1866 to 1868 inclusive.

Gibraltar, Spain, during the years 1853 to 1859 inclusive.

Granada, Spain, by Manuel Fernandez de Figares, during the years 1866 to 1868 inclusive.

Jaen, Spain, by Maria Folache, during the years 1867 and 1868.

Lisbon, Portugal, by Joaquin H. Fradesso de Silveria, for the years 1867 and 1868; and by an unknown observer during the years 1856 to 1865.

Mafra, Portugal, date not recorded.

Murcia, Spain, by Clayo Diaz, during the years 1866 to 1868 inclusive.

Palma, Majorca Island, by Francisco Barcelo, during the years 1866 to 1868 inclusive.

Polytechnic School (Lisbon), Portugal, during the year 1868.

Seville, Spain, by Jacinto Montells, during the years 1866 to 1868 inclusive.

Tarifa, Spain, by Eduardo Ureech, during the years 1867 and 1868.

Valencia, Spain, by Jose Monserrat, during the years 1866 to 1868.

(Nos. 181 to 186.) **Portugal and Spain.**—*Continued.*

Place of observation.		Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
			Relative Prevalence and Force of Winds from the Different Points of the Compass.																			
181. Polytechnic College.	Number of hours.	January	6	22	42	14	6	38	18	14	42	96	198	148	54	24	16	6	0	…………	…	31
		February	68	136	56	24	14	30	6	4	24	58	16	40	34	92	52	38	4	…………	…	29
		March	38	26	14	26	14	112	16	64	28	88	22	36	54	84	46	76	0	…………	…	31
		April	12	2	10	2	2	6	2	2	14	66	112	134	62	180	72	38	4	…………	…	30
		May	42	10	4	0	4	0	0	0	2	10	98	44	60	102	96	272	0	…………	…	31
		June	70	46	20	18	4	6	8	4	20	22	38	44	14	48	100	258	0	…………	…	30
		July	66	6	6	4	0	2	2	0	6	46	74	50	32	42	70	336	2	…………	…	31
		August	108	24	18	4	6	4	0	6	6	30	44	110	32	36	64	248	4	…………	…	31
		September	68	16	12	12	2	8	8	4	16	36	30	92	50	116	90	156	4	…………	…	30
		October	134	96	42	18	6	2	6	6	32	102	64	80	24	32	30	62	8	…………	…	31
		November	200	138	64	22	12	4	0	2	2	16	8	4	12	16	28	192	0	…………	…	30
		December	108	188	50	10	10	16	10	14	12	56	74	52	26	38	12	68	0	…………	…	31
		Spring	92	38	28	28	20	118	18	66	44	164	232	214	176	366	214	386	4	N. 76° 22′ W.	.48	92
		Summer	244	76	44	26	10	12	10	10	32	98	156	204	78	126	234	842	6	N. 41 37 W.	.54½	92
		Autumn	402	250	118	52	20	14	14	12	50	154	102	176	86	164	148	410	12	N. 29 15 W.	.48	91
		Winter	182	346	148	48	30	84	34	32	78	210	288	240	114	154	80	112	4	N. 65 34 W.	.22	91
		The year	920	710	338	154	80	228	76	120	204	626	778	834	454	810	676	1750	26	N. 51 34 W.	.42	366
																					Progress in kilometres.	Total number of kilometres travelled.
	No. of kil.	Spring	2594	750	430	620	368	3632	452	2144	2006	7242	8070	6864	4524	11122	6456	17372	…	N. 77 2 W.	.48	74646
		Summer	8782	2576	940	580	190	168	98	144	526	1566	3812	5474	1378	3476	7228	43448	…	N. 31 48 W.	.75	80386
		Autumn	10804	8236	2662	1178	318	164	172	86	864	4142	1894	4356	1368	3928	3364	13200	…	N. 26 7 W.	.56½	56736
		Winter	4126	16104	5858	1440	862	2312	892	856	2296	8636	11624	8050	2932	4466	1738	2296	…	N. 68 45 W.	.18	74488
		The year	26306	27666	9890	3818	1738	6276	1614	3230	5692	21586	25400	24744	10202	22992	18786	76316	…	N. 42 37 W.	.38	286256

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
		Relative Prevalence of Winds from the Different Points of the Compass.												
181(*a*). Campo Major.	Spring	10	11	4	10	7	11	11	24	4				
	Summer	7	8	4	9	5	3	16	35	0				
	Autumn	9	15	7	11	4	8	8	24	5				
	Winter	9	16	8	11	7	7	6	17	9				
	The year	35	50	23	41	23	34	41	100	18				
182. Lisbon.	Spring	327	201	111	22	54	116	127	124	18	N. 3° 57′ W.	.37		
	Summer	464	246	51	23	24	130	79	120	49	N. 1 26 W.	.50		
	Autumn	334	265	83	30	54	133	130	95	54	N. 0 3 E.	.35½		
	Winter	280	342	94	15	62	85	103	64	36	N. 22 15 E.	.43		
	The year[2]	…	…	…	…	…	…	…	…	…	N. 4 29 E.	.41		
183. Mafra (1451 days).	The year[2]	…	…	…	…	…	…	…	…	…	N. 3 E.	.84		
184. Southwestern Spain.[1]	Spring	61	32	8	30	64	58	10	13	…	S. 14 3 W.	.12	S. 35° E.	.10
	Summer	40	20	8	17	73	74	32	12	…	S. 37 58 W.	.34	S. 28 W.	.26
	Autumn	61	32	0	28	63	72	6	11	…	S. 27 29 W.	.17	S. 2 E.	.11
	Winter	163	17	1	3	60	17	4	6	…	N. 2 52 W.	.39	N. 9 E.	.43
	The year[2]	325	101	17	78	260	221	52	42	…	S. 64 20 W.	.10		
185. Seville.	Spring	9	37	40	15	82	58	26	9	…	S. 2 8 E.	.33		
	Summer	4	10	19	13	135	60	32	2	…	S. 12 58 W.	.65		
	Autumn	7	34	77	22	63	44	20	6	…	S. 39 22 E.	.35		
	Winter	25	81	78	16	42	18	5	6	…	N. 80 40 E.	.47		
	The year[2]	45	162	214	66	322	180	83	23	…	S. 24 43 E.	.32		
186. Tarifa.	Spring	0	1	79	1	4	33	60	6	…	S. 17 14 W.	.13		
	Summer	0	0	80	1	0	5	98	0	…	S. 87 39 W.	.09		
	Autumn	4	0	99	0	7	11	55	6	…	S. 78 48 E.	.18		
	Winter	12	4	82	7	5	25	28	18	…	S. 89 52 E.	.17		
	The year[2]	16	5	340	9	16	74	241	30	…	S. 61 37 E.	.05		

[1] Observed at Badajos.

[2] Computed from the resultants for the seasons.

(Nos. 187 to 197.) **Portugal and Spain.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.
187. Gibraltar.	January	1	2	7	4	2	3	5	7					
	February	1	0	6	2	1	5	4	9					
	March	1	1	6	2	2	8	3	8					
	April	0	1	3	4	1	6	3	12					
	May	0	0	5	4	1	8	3	10					
	June	0	1	8	5	1	8	3	4					
	July	0	1	11	4	2	3	5	5					
	August	1	1	10	4	1	4	4	6					
	September	1	1	9	3	0	3	5	8					
	October	1	2	9	3	1	6	3	6					
	November	1	2	9	3	1	3	4	7					
	December	1	2	6	3	2	3	1	13					
	Spring	1	2	14	10	4	22	9	30	...	S. 82° 39′ W.	.26		
	Summer	1	3	29	13	4	15	12	15	...	S. 81 55 E.	.11		
	Autumn	3	5	27	9	2	12	12	21	...	N. 20 19 E.	.05		
	Winter	3	4	19	9	5	11	10	29	...	N. 54 28 W.	.14		
	The year	8	14	89	41	15	60	43	95	...	S. 86 59 W.	.07		
188. Jaen.	Spring	17	16	18	14	15	12	43	49	...	N. 57 50 W.	.26		
	Summer	9	9	11	6	5	7	66	71	...	N. 62 38 W.	.61		
	Autumn	6	13	8	12	10	29	50	44	...	N. 84 29 W.	.44		
	Winter	19	18	4	11	22	28	46	33	...	N. 85 9 W.	.36		
	The year[4]	51	56	41	43	52	76	205	197	...	N. 71 55 W.	.42		
189. Granada.	Spring	7	47	6	36	21	66	5	88	...	N. 79 16 W.	.18		
	Summer	3	26	2	19	9	132	4	80	...	S. 72 30 W.	.46		
	Autumn	4	44	7	74	32	68	7	37	...	S. 7 25 E.	.26		
	Winter	3	87	7	94	22	17	5	36	...	S. 83 31 E.	.34		
	The year[4]	17	204	22	223	84	283	21	241	...	S. 31 23 W.	.12		
190. Southern Spain.[1]	Spring	34	103	157	76	126	191	143	182	...	S. 57 1 W.	.14	N. 78½° W.	.07
	Summer	17	48	141	52	153	219	212	168	...	S. 57 31 W.	.32	S. 69½ W.	.23
	Autumn	24	96	218	117	114	164	144	114	...	S. 1 9 E.	.14	S. 48 E.	.07½
	Winter	62	194	190	137	86	99	94	122	...	N. 79 23 E.	.18	N. 62½ E.	.26
	The year[4]	137	441	706	382	479	673	593	586	...	S. 27 56 W.	.10		
191. Southern Central Spain.[2]	Spring	17	3	30	25	13	39	115	34	...	S. 82 38 W.	.43	S. 72 W.	.12
	Summer	19	7	19	19	16	47	128	21	...	S. 80 15 W.	.51	S. 74 W.	.20
	Autumn	25	25	46	9	6	32	85	45	...	N. 60 24 W.	.29	N. 27½ E.	.16
	Winter	23	17	44	41	11	25	77	33	...	N. 88 49 W.	.12	N. 88 E.	.20
	The year[4]	84	52	139	94	46	143	405	133	...	N. 89 49 W.	.33		
192. Albacete.	Spring	7	23	17	65	3	61	35	65	...	S. 62 59 W.	.18		
	Summer	3	12	25	115	14	47	44	16	...	S. 48 0 E.	.57		
	Autumn	5	14	20	60	10	54	44	35	...	S. 34 13 W.	.25		
	Winter	2	17	8	46	14	56	77	70	...	S. 78 45 W.	.40		
	The year[4]	...	...	...	...	...	...	...	...	...	S. 19 43 W.	.20		
193. Murcia	Spring	0	37	56	63	45	15	2	58	...	S. 65 40 E.	.29		
	Summer	2	40	94	84	14	13	5	24	...	S. 76 48 E.	.56		
	Autumn	2	36	40	59	14	53	13	56	...	S. 29 41 E.	.12		
	Winter	3	42	18	19	9	78	40	62	...	S. 89 14 W.	.29		
	The year[4]	7	155	208	225	82	159	60	200	...	S. 59 32 E.	.17		
194. Alicante.	Spring	10	36	19	82	65	24	15	25	...	S. 31 18 E.	.37		
	Summer	0	26	61	109	69	4	7	0	...	S. 48 15 E.	.71		
	Autumn	15	46	36	48	57	24	19	28	...	S. 49 0 E.	.23		
	Winter	35	38	27	30	51	22	19	49	...	N. 33 50 E.	.04		
	The year[4]	60	146	143	269	242	74	60	102	...	S. 45 18 E.	.32		
195. Valencia.	Spring	35	32	8	4	7	29	107	54	...	N. 63 40 W.	.53½		
	Summer	34	55	40	24	11	14	70	28	...	N. 4 1 W.	.23		
	Autumn	38	5	6	4	6	23	153	38	...	N. 76 44 W.	.69		
	Winter	24	2	0	0	2	33	179	31	...	N. 84 22 W.	.83		
	The year	131	94	54	32	26	99	509	151	...	N. 71 6 W.	.52		
196. Southeastern Spain.[3]	Spring	52	128	100	214	120	129	159	202	...	S. 33 26 W.	.08	N. 60½ E.	.03
	Summer	39	133	220	332	108	78	126	68	...	S. 55 47 E.	.35	S. 72 E.	.37½
	Autumn	60	101	102	171	87	154	229	157	...	S. 64 20 W.	.16	N. 80 W.	.08
	Winter	64	99	53	95	76	189	315	212	...	N. 89 0 W.	.37	N. 73 W.	.31½
	The year	215	461	475	812	391	550	829	639	...	S. 39 18 W.	.08		
197. Palma.	Spring	12	31	15	12	73	75	17	41	...	S. 37 58 W.	.33		
	Summer	4	16	13	7	86	132	5	13	...	S. 26 7 W.	.64		
	Autumn	22	43	19	7	72	55	15	40	...	S. 37 59 W.	.16		
	Winter	25	45	5	6	43	66	26	55	...	N. 88 15 W.	.26		
	The year	63	135	52	32	274	328	63	149	...	S. 41 21 W.	.32		

1 Observed at Gibraltar, Granada, Jaen, Seville and Tarifa.
2 Observed at Cuidad Real.
3 Observed at Albacete, Alicante, Murcia and Valencia.
4 Computed from the resultants for the seasons.

(Nos. 198 to 203.) **Northern Algeria.**

Observed at the following places, viz. :—

Algiers, during the years 1837, 1838 and 1855 to 1857 inclusive.

Arzew, by M. Maleplane, during the years 1851 to 1856 inclusive.

Mostaganem, by Aucour and Robin, during the years 1850 to 1853, and 1857 to 1862, both inclusive.

Oran, by Aucour, during the years 1841 to 1853 inclusive, 1858, 1860, 1861 and 1862.

Oum-Theboul, by Cappés, Director of Mines, during the years 1862, 1863 and 1864.

Setif, by C. Dumas, during the year 1855 and parts of 1856 and 1857.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or var.			Direction.	Force.	
198. Arzew.	The year	302	607	197	41	71	149	608	217	...	....	...	....	...	2192
199. Oran.	Spring	2501	2296	221	224	343	1419	342	2195	0	N. 1° 10′ E.	.44	....	...	1564
	Summer	3138	2400	71	119	163	264	152	3328	0	N. 7 0 W.	.72	....	...	1564
	Autumn	2080	2076	72	304	430	1349	362	2682	0	N. 17 45 W.	.26	....	...	1547
	Winter	1306	1582	196	522	985	2555	541	1794	0	N. 74 24 W.	.43	....	...	1534
	The year	9025	8354	560	1169	1861	5587	1397	9999	0	N. 18 26 W.	.43	....	...	6209
200. Mostaganem.	Spring	824	1945	313	434	70	73	1181	4905	0	N. 35 0 W.	.58½	....	...	920
	Summer	901	3354	172	0	1	35	991	4391	0	N. 13 37 W.	.66	....	...	920
	Autumn	869	2302	284	341	71	326	1493	4030	0	N. 26 34 W.	.55	....	...	910
	Winter	912	1743	1288	848	119	624	2008	2190	0	N. 19 18 W.	.28	....	...	902
	The year[2]	...	...	...	...	...	...	...	...	...	N. 21 49 W.	.52	....	...	3652
201. The two preceding combin'd.	Spring	3325	4241	534	658	413	1492	1523	7100	0	N. 20 49 W.	.52	N. 28° W.	.04	2484
	Summer	4039	5754	243	119	104	299	1143	7719	0	N. 10 13 W.	.69	N. 11 E.	.24	2484
	Autumn	2949	4378	356	645	501	1675	1855	6712	0	N. 24 14 W.	.50	N. 80 W.	.04	2457
	Winter	2218	3325	1484	1370	1104	3179	2549	3984	0	N. 42 19 W.	.21	S. 5 E.	.29	2436
	The year	12531	17698	2617	2792	2122	6645	7070	25515	...	N. 18 50 W.	.47	....	...	9861
201½. Algiers.[1]	Spring	5	6	5	9	8	25	24	35	0	N. 87 48 W.	.43	....	...	117
	Summer	31	36	30	9	13	48	27	38	0	N. 40 54 W.	.17	....	...	232
	Autumn	3	5	13	7	5	31	31	7	4	S. 60 45 W.	.39	....	...	106
	Winter	4	6	3	17	3	17	10	23	0	S. 82 24 W.	.23	....	...	83
	The year[2]	58	131	77	64	36	153	152	245	6	N. 58 24 W.	.28	....	...	922
202. Setif.	Spring	21	16	6	7	20	24	51	37	0	N. 77 2 W.	.40	....	...	184
	Summer	57	56	6	5	14	33	35	35	0	N. 22 47 W.	.36	....	...	246
	Autumn	10	9	1	4	10	41	35	11	0	S. 18 47 W.	.54	....	...	121
	Winter	13	10	4	4	8	31	49	30	1	N. 83 46 W.	.52½	....	...	149
	The year[2]	...	...	...	...	...	...	...	...	...	N. 77 57 W.	.40	....	...	700
203. Oum-Theboul.	Spring	7	16	0	10	12	10	3	93	1	N. 39 1 W.	.49	N. 12 W.	.05	276
	Summer	7	9	28	17	21	6	6	86	0	N. 32 13 W.	.25	S. 56 E.	.20	276
	Autumn	7	13	7	15	9	10	5	96	1	N. 45 24 W.	.46	S. 75 W.	.03	273
	Winter	6	16	2	15	0	10	2	82	2	N. 47 44 W.	.58	N. 64½ W.	.14	271
	The year[2]	...	...	...	...	...	...	...	...	...	N. 40 3 W.	.44	....	...	1096

[1] The seasons for the years 1855, 1856 and 1857 only. [2] Computed from the resultants for the seasons.

(No. 204.) **City of Tunis, Northern Africa.**

Computed from observations made during the years 1851 to 1854 inclusive.

Time of the year.	Morning.		Noon.		Evening.	
	Direction of resultant.	Ratio of resultant to sum of winds.	Direction of resultant.	Ratio of resultant to sum of winds.	Direction of resultant.	Ratio of resultant to sum of winds.
January	S. 72° W.	.73	N. 61° W.	.28	N. 73° E.	.01
February	N. 88 W.	.76	N. 41 W.	.51	N. 2 E.	.25
March	S. 81 W.	.63	N. 24 W.	.41	N. 27 E.	.32
April	S. 76 W.	.45	N. 4 E.	.24	N. 56 E.	.26
May	S. 71 W.	.58	N. 32 E.	.26	N. 76 E.	.28
June	N. 89 W.	.46	N. 29 E.	.39	N. 66 E.	.24
July	N. 84 W.	.36	N. 34 E.	.67	N. 55 E.	.26
August	S. 78 W.	.58	N. 18 E.	.53	N. 58 E.	.38
September	S. 79 W.	.66	N. 7 E.	.46	N. 49 E.	.30
October	S. 72 W.	.76	N. 11 E.	.45	N. 63 E.	.25
November	S. 70 W.	.91	N. 57 W.	.31	N. 17 E.	.16
December	S. 82 W.	.89	N. 50 W.	.43	N. 15 W.	.18

(No. 204.) **City of Tunis.**—*Continued.*

The published report gives the observations for the year 1854 only, which, with their resultants, etc., are as follows:—

	Relative Prevalence of Winds from the Different Points of the Compass.								Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
	North.	N. E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S. W. or betw'n S. & W.	West.	N. W. or betw'n N. & W.			
Spring	17	35	10	39	7	31	15	44	N. 19° 14′ W.	.09	92
Summer	20	56	3	30	5	16	36	21	N. 2 34 E.	.20	92
Autumn	12	29	0	20	2	26	47	28	N. 70 37 W.	.32½	91
Winter	8	13	4	22	4	26	26	63	N. 68 26 W.	.39	90
The year	57	133	17	111	18	99	124	156	N. 58 1 W.	.20	365

(Nos. 205 to 208*a*.) **Greece, the Islands of the Mediterranean Sea, and Southern Turkey.**

Observed at the following places, viz.:—

Athens, Greece, by Dr. Julius Schmidt, for three years, 1859, 1860 and 1861.

Corfu, Ionian Islands, by D. Mackenzie, during the years 1846 and 1854 to 1859.

Janina, Turkey, by Major R. Stuart, for an aggregate period of 14 months, in the years 1866, 1867 and 1868.

Malta, for an aggregate period of between three and four years, from 1853 to 1859 inclusive.[1]

Syra, Grecian Archipelago, during eleven days, in the month of December.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
205. Malta.	January	2	8	5	4	1	3	3	5	...	....	...	....	...	93+
	February	1	3	1	2	3	9	3	6	...	....	...	....	...	84+
	March	2	4	2	3	2	3	4	11	...	....	...	....	...	93+
	April	2	3	1	2	1	4	2	10	...	....	...	....	...	90+
	May	1	5	3	5	1	2	3	11	...	....	...	....	...	93+
	June	2	7	2	2	1	4	4	8	...	....	...	....	...	90+
	July	6	5	2	3	1	3	1	10	...	....	...	....	...	93+
	August	2	8	2	3	1	3	2	10	...	....	...	....	...	93+
	September	3	6	2	2	1	3	1	12	...	....	...	....	...	90+
	October	2	3	6	5	4	3	3	5	...	....	...	....	...	93+
	November	1	2	3	4	2	6	2	10	...	....	...	....	...	90+
	December	2	3	1	3	2	8	4	8	...	....	...	....	...	93+
	Spring	5	12	6	10	4	9	9	32	...	N. 41° 21′ W.	.28	N. 49° W.	.07	276+
	Summer	10	20	6	8	3	10	7	28	...	N. 16 0 W.	.32	N. 15 E.	.15	276+
	Autumn	6	11	11	11	7	12	6	27	...	N. 36 11 W.	.13	S. 42 E.	.07	273+
	Winter	5	14	7	9	6	20	10	19	...	N. 82 43 W.	.16	S. 12 W.	.11½	270+
	The year	26	57	30	38	20	51	32	106	...	N. 38 7 W.	.21	....	...	1095+
206. Corfu.[2]	January	5	8	7	4	1	1	1	4	0	....	...	....	...	155
	February	5	4	8	4	1	0	2	3	1	....	...	....	...	141
	March	5	2	9	5	1	2	3	3	1	....	...	....	...	155
	April	4	4	5	6	2	2	2	4	1	....	...	....	...	150
	May	6	4	4	9	1	1	1	4	1	....	...	....	...	155
	June	7	3	3	7	1	1	4	3	1	....	...	....	...	150
	July	8	3	4	3	1	1	5	5	1	....	...	....	...	155
	August	7	3	6	4	2	0	4	5	0	....	...	....	...	155
	September	7	2	5	7	3	2	2	2	0	....	...	....	...	150
	October	6	3	7	7	2	1	2	3	0	....	...	....	...	155
	November	4	5	6	6	2	1	3	3	0	....	...	....	...	150
	December	4	4	7	5	2	2	2	5	0	....	...	....	...	155
	Spring	22	15	19	52	13	9	11	22	3	S. 76 35 E.	.21	S. 8½ E.	.07	552
	Summer	36	13	16	30	9	9	16	39	2	N. 5 34 W.	.21	N. 49 W.	.28	552
	Autumn	22	15	22	64	10	11	10	19	0	S. 73 18 E.	.34	S. 47 E.	.18	546
	Winter	20	22	26	53	8	7	8	26	1	N. 85 46 E.	.28	N. 85½ E.	.08	541
	The year	100	65	83	199	40	36	45	106	6	N. 83 36 E.	.18½	....	...	2191

[1] See Hunter's Travels in Upper and Lower Egypt, vol. i. p. 75.
[2] The monthly results do not include the year 1846.

(Nos. 207 to 208(*a*).) **Greece, etc.—*Continued.***

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
207. Syra.	December	1	7	2	0	0	1	0	0	0	N. 49° 59′ E.??	.74	....	...	31
208. Janina.	Spring	5	11	9	18	12	1	4	7	26	S. 68 41 E.	.23	....	...	93
	Summer	28	14	9	9	3	1	3	25	31	N. 4 53 E.	.37	....	...	123
	Autumn	10	10	8	3	0	2	2	10	15	N. 18 2 E.	.36	....	...	60
	Winter	8	8	12	41	22	2	12	15	30	S. 38 47 E.	.24	....	...	150
	The year[1]	...	...	...	...	...	...	...	...	...	N. 48 41 E.	.17	....	...	426
208(*a*). Athens.	Spring	15	18	1	2	15	34	8	7	...	S. 70 35 W.	.23	S. 37° W.	.21	
	Summer	17	31	5	2	16	21	3	5	...	N. 34 20 E.	.12	N. 84½ E.	.16	
	Autumn	30	15	2	1	14	21	11	6	...	N. 47 38 W.	.22½	N. 52 W.	.16	
	Winter	26	19	4	5	15	12	11	8	...	N. 12 58 W.	.19	N. 37 E.	.11	
	The year	88	83	12	10	60	88	33	26	...	N. 45 17 W.	.12			

[1] Computed from the resultants for the seasons.

(Nos. 209 to 214.) **Turkey in Asia.**

Observed at the following places, viz.:—

Aleppo, Syria, Capt. James Capper, from September, 1747, to September, 1749, inclusive.

Cæsarea, Palestine, from Oct. to Feb. of the succeeding year inclusive; date not preserved.

Erzeroom, Armenia, during the year 1836.

Mosul, Mesopotamia, from February, 1854, to December, 1855.

Smyrna, Asia Minor, by Rev. N. Benjamin, from September 5th, 1843, to June 25th, 1844.

Tarsus, Asia Minor, from August to November inclusive; date not preserved.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
209. Smyrna.	Spring	8	18	8	5	18	2	0	5	1	N. 86° 7′ E.	.30	....	..	65
	Summer	0	8	2	3	2	2	5	3	0	N. 26 58 E.	.10	....	...	25
	Autumn	14	22	7	6	15	5	3	2	13	N. 66 31 E.	.23	....	...	87
	Winter	7	26	12	15	19	2	0	1	4	S. 82 45 E.	.45	....	...	86
	The year[2]	...	...	...	...	...	...	...	...	...	N. 81 49 E.	.26	....	...	263
210. Tarsus.	August	17	0	0	2	3	59	0	0	12	S. 54 9 W.	.54	....	...	31
	Autumn	36	8	2	4	28	43	0	0	18	S. 45 30 W.	.20	....	...	92
211. Cæsarea.	Oct.& Nov.	15	21	24	1	1	0	9	9	0	N. 35 2 E.	.53	....	...	61
	Winter	45	41	16	11	10	2	27	27	0	N. 4 5 E.	.41	....	...	90
212. Aleppo.[1]	Spring	12	30	16	6	4	16	50	50	...	N. 48 24 W.	.40	N. 27½° E.	.03	184
	Summer	6	0	1	0	0	32	77	64	...	N. 78 45 W.	.81	S. 80 W.	.49	180
	Autumn	21	12	8	4	4	6	19	29	...	N. 32 7 W.	.45	N. 27¼ E.	.16	103
	Winter	10	17	18	6	4	13	8	13	...	N. 29 46 E.	.18	S. 78½ E.	.41	89
	The year[2]	...	...	...	...	...	...	...	...	...	N. 52 28 W.	.39	....	...	556

[1] The following remarks by Capt. Capper, descriptive of the geographical position of Aleppo, and the local influences by which it is surrounded, accompany these observations.

"Built on the edge of the great desert, which lies to the E. N. E. and S. E., the sea, with the mountainous country and the Black Sea being to the N. and N. W.; the mountains of Armenia, Mingrelia and Circassia to the N. by E. and N. N. E.; and the deserts of Arabia to the S. E., with the mountainous country on the coast of the Mediterranean Sea to the S. In the cold months the temperature near Aleppo will be much higher than that of the countries to the N., and consequently the current of cold air will move towards this place from the frozen mountains of Caucasus to restore the equilibrium. In the hot months, on the contrary, the land in all the surrounding countries is much hotter than the sea, therefore as the air over the desert to the E. at this season will be much rarefied, the nearest body of cold air will come from the sea to the W. or from the Black Sea to the N. W., to restore the equilibrium; but at other seasons the wind will be more variable, for the temperature of the land and sea being nearly equal, that is, about 56°, the current of air will move different ways in the manner specified in the table."

[2] Computed from the resultants for the seasons.

(Nos. 213 and 214.) **Turkey in Asia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
213. Erzeroom.	Spring	15	4	34	5	0	3	38	18	...	N. 26° 38′ W.	.24	N. 80° W.	.09	92
	Summer	4	6	42	5	0	3	20	10	...	N. 64 52 E.	.25	S. 69½ E.	.26	92
	Autumn	10	3	22	2	0	3	36	24	...	N. 49 9 W.	.39	N. 78 W.	.28	91
	Winter	9	14	18	5	2	2	13	4	...	N. 43 50 E.	.32	N. 82 E.	.24	90
	The year	38	27	116	17	2	11	107	56	...	N. 5 33 W.	.20	....	...	365
214. Mosul.	January	7	6	12	7	6	1	4	10	3	....	...	....	...	56
	February	4	6	14	12	4	2	5	10	1	....	...	....	...	56
	March	4	5	5	4	3	5	3	8	0	....	...	....	...	31
	April	10	2	2	11	8	1	3	9	4	....	...	....	..	60
	May	17	11	3	2	5	1	1	20	4	....	...	....	...	62
	June	9	8	0	0	1	4	3	4	3	....	...	....	...	32
	July	6	6	3	1	1	1	8	11	6	....	...	....	...	43
	August	16	6	1	1	3	8	4	17	1	....	...	....	...	57
	September	18	5	2	2	1	4	3	22	2	....	...	....	...	59
	October	10	4	0	7	7	6	2	11	6	....	...	....	...	53
	November	8	3	2	1	6	2	2	13	0	....	...	....	...	37
	December	7	3	4	7	6	1	3	7	0	....	...	....	...	38
	Spring	31	18	10	17	16	7	7	37	8	N. 5 12 W.	.24⅓	S. 77 E.	.06	151
	Summer	31	20	4	2	5	13	15	32	10	N. 27 36 W.	.44½	N. 42½ W.	.18⅓	132
	Autumn	36	12	4	10	14	12	7	46	8	N. 30 57 W.	.37	N. 61½ W.	.12½	150
	Winter	18	15	30	26	16	4	12	27	4	N. 67 18 E.	18	S. 53 E.	.31	152
	The year[1]	...	...	...	...	...	...	...	...	...	N. 17 29 W.	.27	....	...	585

[1] Computed from the resultants for the seasons.

(Nos. 215 to 221.) **Southern Trans-Caucasia and Northern Persia.**

Observed at the following places, viz.:—

Aralikh, Trans-Caucasia, during the year 1852 and part of 1853.

Astrabad, Persia, during the years 1852 to 1856 inclusive. The observations were made on the island of Ashur-Ade, in the Bay of Astrabad, by officers of the Russian Naval Station.

Lenkoran, Trans-Caucasia, from December, 1851, to November, 1853, inclusive.

Mt. Seir (Ooroomiah), Persia, by Rev. David T. Stoddard, from April, 1852, to March, 1854, inclusive.

Ooroomiah (probably the same as Mt. Seir), Persia, by Rev. Justin Perkins, D.D., for the author, from January 1 to June 18, 1848, and from November, 1849, to November, 1850, inclusive.

Tabreez, Persia, for the author, and through the agency of Rev. Dr. Perkins, who kindly interested himself in the matter, by George A. Stevens, Esq., from September to December inclusive, in the year 1850.

Tehran,[1] Persia, from February to May inclusive, in the year 1850.

[1] These observations were made at the request of the author, through the kind agency of Rev. Dr. Perkins of Ooroomiah, and under the direction of William Taylor Thompson, Esq., First Secretary of the British Embassy at Tehran, by Joseph Reed (also connected with the embassy), from February to May inclusive, in the year 1850. Dr. Perkins, in communicating the observations, remarks as follows:—

"Properly to understand these phenomena" (*i. e.* the winds at Tehran), "it may be well that you have in mind the local situation of Tehran. I will copy a reference to its situation, penned on the spot when I visited it several years ago: 'The local situation of Tehran renders its situation extremely warm, and hemmed in as it is on the north and east by naked mountains, which tower some 5000 or 6000 feet above it in the rear, and the vast extent of arid land in the two opposite directions reflecting the heat in summer like a burning desert, the city cannot be otherwise than like a great oven during the warm months of the year, not taking into account at all its relative elevation, which is much less than that of Tabreeze and other cities of Azerbijon.'

"I may add to this notice that the Caspian Sea, lying some seventy or eighty miles north of Tehran, though separated from it by a lofty range of mountains, doubtless affects the character and direction of its winds, and still more probably, the immense salt desert that skirts the plain of Tehran, some fifty miles southeast of the town."

(Nos. 215 and 216.) **Southern Trans-Caucasia, etc.—*Continued.***

Kind of observations.	Time of the year.	North.	N. by E.	N. N. E.	N. E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.
215. Ooroomiah.[1]	January	3	1	1	0	0	0	2	0	3	10	22	5	15	8	12
	February	2	2	0	0	0	1	2	0	1	4	13	5	5	14	15
	March	0	1	0	0	0	0	1	1	0	14	3	13	8	20	10
	April	3	3	1	1	0	2	2	7	0	13	13	13	14	12	8
	May	4	1	2	0	2	1	1	1	0	14	11	8	8	15	9
	June	8	4	0	5	0	6	1	3	5	21	10	1	0	2	1
	July	2	2	0	2	0	6	2	2	0	34	0	0	0	10	0
	August	4	4	0	16	0	0	6	2	0	28	0	2	0	4	0
	September	16	2	0	6	0	0	8	6	0	22	2	2	10	4	2
	October	0	0	0	0	0	0	2	0	0	36	2	8	14	10	0
	November	11	8	1	3	0	1	2	1	0	17	0	3	2	0	0
	December	10	28	4	2	0	2	4	8	0	2	2	4	2	2	0
	The year	63	56	9	35	2	19	33	31	9	215	78	64	78	101	57

		S. W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W.	N. N. W	N. by W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	No. of days.
215. Ooroomiah.[1]	January	6	9	19	41	4	1	9	6	8	1	S. 44° 25′ W.	.49	62
	February	13	9	35	33	5	2	3	6	1	0	S. 60 2 W.	.62	57
	March	15	10	37	33	10	3	5	1	1	0	S. 56 30 W.	.64	62
	April	10	2	18	29	10	3	7	8	1	0	S. 44 7 W.	.43	60
	May	12	15	23	29	8	2	9	8	3	0	S. 56 56 W.	.50	62
	June	10	1	8	26	13	1	25	23	6	0	N. 62 36 W.	.34	48
	July	10	0	6	46	22	0	32	0	0	0	S. 70 46 W.	.48	31
	August	2	0	0	36	10	0	62	2	4	0	N. 56 21 W.	.43	31
	September	12	0	8	52	4	0	18	0	6	0	S. 84 35 W.	.28	30
	October	34	2	10	42	8	0	18	0	0	0	S. 44 37 W.	.53½	31
	November	20	1	7	39	15	1	39	5	4	0	N. 88 57 W.	.43	30
	December	6	2	18	36	16	2	18	4	14	0	N. 51· 25 W.	.47½	31
	The year	150	51	189	442	125	15	245	63	48	1	S. 75 5 W.	.40	535

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
216. Mt. Seir.[2]	Spring	53	...	53	...	140	...	248	...	...	S. 65° 43′ W.	.43	....	...	164
	Summer	54	...	90	...	97	...	250	...	...	S. 74 57 W.	.34	....	...	164
	Autumn	32	...	85	...	135	...	219	...	...	S. 52 27 W.	.36	....	...	157
	Winter	50	...	39	...	175	...	215	...	...	S. 54 37 W.	.45	....	...	160
	The year	189	...	267	...	547	...	932	...	...	S. 61 38 W.	.39	....	...	645

[1] Dr. Perkins, in communicating these observations, gives the following description of his plan of observation, and of the local influences to which the winds are subject.

"My residence is on the northeastern declivity of a high mountain. This location may, perhaps, affect the direction of the wind here somewhat, though probably not a great deal. There are, however, some important local causes affecting the winds in this province, which I will here state. About once a month, ordinarily, we have a strong wind, often violent, from the west, which is the simoon or samiel, from the Arabian desert. It usually continues about three days; and though its noxious properties are much neutralized by its passage over a distance of hundreds of miles, and across the high snowy Koordish Mountains, it is still a warm wind (often hot) here, and very debilitating to men and animals. And it is often so dry and hot here as to wither and crisp vegetables. . . . There is ordinarily, particularly in summer, a morning breeze, lasting two-thirds of the day, from the Lake of Ooroomiah, which is about fifteen miles east of us; and an evening breeze, continuing through the night, from the Koordish Mountains on the west. . . . We have also occasionally (once or more in the course of a month), a warm south wind from the hot plains of Mesopotamia, the nearest point of which is about a hundred miles distant; but this wind is distinct from the simoon that comes to us from the Arabian desert. At intervals of a few weeks, and sometimes oftener, we have also a cold invigorating wind from the north, which comes down from the mountains of Ararat.

"The daily lake and mountain breezes continue during the warm part of the year with great regularity, except when interrupted by the simoons, usually once in four, five, or six weeks. During this part of the year there is also much uniformity in the weather, a cloud seldom appearing in the sky."

[2] Mr. Stoddard, in communicating these observations, adds the following remarks:—

"In the summer we have a regular land and sea breeze, the wind coming from the mountains west of us during the night, and from the lake of Ooroomiah, which lies to the east and southeast of us, during the day."

(Nos. 216½ to 221.) Southern Trans-Caucasia, etc.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
216½. Nos. 215 and 216 combined.	Spring	...	...	...	...	...	...	...	...	...	S. 58° 54′ W.	.47	S. 22° W.	.10	
	Summer	...	...	...	...	...	...	...	...	...	S. 89 13 W.	.35	N. 5 E.	.14	
	Autumn	...	...	...	...	...	...	...	...	...	S. 61 34 W.	.37	S. 48½ E.	.05	
	Winter	...	...	...	...	...	...	...	...	...	S. 64 1 W.	.44	S. 35¼ W.	.06	
	The year	...	...	...	...	...	...	...	...	...	S. 68 27 W.	.39			
217. Aralikh.[1]	Spring	8	14	40	55	14	5	55	25	60	S. 31 6 E.	.08	....	...	92
	Summer	17	16	53	25	6	7	79	34	30	N. 47 37 W.	.14	....	...	92
	Winter	3	12	26	32	7	10	27	21	132	S. 38 19 E.	.05	....	...	90
218. Tabreez.[2]	September	2	8	44	4	0	4	19	8	1	....	...	....	...	30
	October	5	3	26	3	7	2	43	4	...	....	...	....	...	31
	November	2	0	30	1	7	1	47	2	...	....	...	....	...	30
	December	0	0	33	4	9	4	43	0	...	....	...	....	...	31
	Autumn	9	11	100	8	14	7	109	14	1	....	...	....	...	91
219. Lenkoran.[1]	Spring	3	43	26	79	28	52	14	11	11	S. 34 4 E.	.36	S. 41½ E.	.30	92
	Summer	4	35	20	73	35	43	13	12	35	S. 29 8 E.	.34	S. 36 E.	.28	92
	Autumn	17	57	34	11	3	60	24	49	18	N. 26 8 W.	.15	N. 18 W.	.22	91
	Winter	33	47	4	14	11	54	44	60	0	N. 57 23 W.	.35	N. 35½ W.	.40	90
	The year	57	182	84	177	77	209	95	132	64	S. 1 21 E.	.07	....	...	365
220. Tehran.	February	12	12	5	3	2	18	6	25	...	....	...	....	...	28
	March	4	6	3	10	8	29	17	16	...	....	...	....	...	31
	April	4	5	0	6	4	7	50	14	...	....	...	....	...	30
	May	1	4	1	11	19	32	23	2	...	....	...	....	...	31
	Spring	9	15	4	27	31	68	90	32	...	....	...	....	...	92
221. Astrabad.	January	4	5	6	4	1	2	3	2	4					
	February	5	4	5	1	1	2	5	1	4					
	March	6	3	3	2	0	3	6	5	3					
	April	5	2	3	1	0	2	9	4	4					
	May	4	1	1	0	1	3	10	6	5					
	June	4	1	1	0	1	4	10	4	5					
	July	3	0	1	0	1	4	12	6	4					
	August	2	0	0	1	0	3	15	6	4					
	September	3	1	1	1	1	5	10	5	3					
	October	4	2	4	2	2	3	5	4	5					
	November	3	5	7	2	1	3	2	2	5					
	December	2	5	6	4	1	3	3	2	5					
	Spring	15	6	7	3	1	8	25	15	12	N. 52 55 W.	.38	N. 44 W.	.13	
	Summer	9	1	2	1	2	11	37	16	13	N. 78 41 W.	.58	S. 86 W.	.36	
	Autumn	10	8	12	5	4	11	17	11	13	N. 54 27 W.	.15	S. 61 E.	.10	
	Winter	11	14	17	9	3	7	11	5	13	N. 53 42 E.	.19	S. 86 E.	.36	
	The year	45	29	38	18	10	37	90	47	51	N. 57 28 W.	.25			

[1] Dr. Perkins, of Ooroomiah, in communicating these observations, remarks as follows :—

"At Tabreez, across the lake, which is about 70 miles distant from us (in a direct line), and nearly east from Ooroomiah, there is daily a strong wind from the Caspian Sea, which is about 150 miles northeast from that city. This wind is very invigorating."

[2] For the year 1853 only, Chevalier Kahnikoff makes the directions of the resultants for the year 1852 as follows :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Aralikh,	N. 59° 42′ W.	N. 54° 19′ W.	N. 9° 51′ E.	N. 46° 59′ W.	N. 57° 52′ W.
Lenkoran,	N. 58 3 E.	S. 0 5 W.	S. 81 38 W.	N. 12 38 W.	S. 78 4 W.

(Nos. 222 to 224.) Central Asia.

Observed, without formal record, at the following places, or in their vicinity, viz. :—

City of Bokhara.
Kara Korum Mountains, Thibet.
Leh, Ladak, Thibet.
Merve, Southern Turkestan.
Shurukhs, Southern Turkestan.
Yarkund, Chinese Turkestan.

(Nos. 222 to 224.) **Central Asia.**—*Continued.*

No. 222. Merve and Shurukhs. Sir Alexander Burns, while travelling between these two places, but nearer to the former, on the 31st of August, speaking of the whirlwinds which are of frequent occurrence in the desert west of the Moorghab river, says: "They appeared to rise from gusts of wind, for the air itself was not disturbed, but by the usual *north wind that blows steadily in this desert.*"

No. 223. City of Bokhara. Chevalier H. Kahnikoff, who spent some time in this city, in the years 1841 and 1842, remarks as follows, in his work on Bokhara: "The most prevalent winds blow from the north, and more especially from the northeast; they are so constant that during the eight months of my stay at Bokhara, I do not recollect that the wind blew more than ten times from the south." [Quoted by Humboldt, in his *Asie Centrale.*]

No. 224. Kara Korum Mountains, Leh and Yarkund. The experience of a native of Ladak, while travelling from Leh to Yarkund, over the Kara Korum Mountains—a journey of 60 days—is narrated by Sir Alexander Burns, who says that leaving Leh late in the month of March, and reaching the mountains in April, he was detained there "a whole week" by the "violence of the *north wind* and the drifting snow."

(Nos. 225 to 228*a*.) **Northeastern China and Japan.**

Observed at the following places, viz.:—

Chefoo, from Nov. 1866, to Feb. 1867, and from March to August, 1869, both inclusive.

Pekin, by the Jesuit missionary, Gachkevitche, during the years 1757 to 1762 inclusive; at the Russian School, during the years 1844 and 1850 to 1855 inclusive; and by the Archimandrite, Drs. Palladius and Fritsch, during the year 1870; and from February, 1871, to January, 1872, inclusive.

Yokohama, by Dr. Gratama, sixteen months, December, 1869, to March, 1871, inclusive. (January, February and March, 30 days each.)

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
225. Pekin, 1757–1762.	The year	599	561	285	428	1477	121	127	415	...	S. 22° 4′ E.	.32	....	...	2191
226. Pekin, 1844.[1]	January	26	15	7	9	19	34	0	106	63	N. 50 22 W.	.35	....	...	31
	February	23	21	5	6	24	46	11	70	54	N. 68 55 W.	.28	....	...	29
	March	28	16	13	27	66	39	8	34	28	S. 18 12 W.	.20	....	...	31
	April	30	16	14	27	66	40	8	33	17	S. 17 20 W.	.20	....	...	30
	May	26	27	12	25	81	36	3	42	20	S. 10 46 W.	.19	....	...	31
	June	25	38	16	34	67	28	4	30	22	S. 30 7 E.	.17	....	...	30
	July	15	26	17	28	81	61	4	15	28	S. 1 28 W.	.36	....	...	31
	August	35	33	5	30	93	43	0	9	23	S. 9 5 E.	.30	....	...	31
	September	40	23	6	19	52	39	8	48	23	S. 85 15 W.	.13	....	...	30
	October	40	25	5	20	23	32	18	66	45	N. 48 37 W.	.25	....	...	31
	November	53	15	1	7	35	27	0	51	79	N. 43 32 W.	.21	....	...	30
	December	29	21	4	1	18	23	0	119	62	N. 40 43 W.	.44	....	...	31
	The year	370	276	105	233	625	448	64	623	464	S. 74 22 W.	.11½	....	...	366
227. Pekin, 1844, '50 to '55, and '70 to '72.	Spring	168	124	76	199	465	269	55	298	232	S. 17 14 W.	.24	S. 10½° E.	.18	
	Summer	185	188	116	230	452	229	32	149	333	S. 16 10 E.	.18	S. 52 E.	.20	
	Autumn	212	124	52	98	283	199	70	374	480	N. 75 2 W.	.14½	N. 24 W.	.10	
	Winter	177	120	34	67	156	206	63	592	481	N. 54 17 W.	.30	N. 32¼ W.	.26	
	The year	1328	970	485	1055	2455	1597	380	2396	2320	S. 64 21 W.	.11			
227(*a*). Pekin, 1872.	See Addendum at the end of this Zone.														
228. Chefoo.	January	6	0	0	1	6	1	3	11	3					
	February	6	2	1	1	1	0	2	7	8					
	March	3	3	1	1	7	4	2	5	5					
	April	3	3	2	3	6	4	2	3	4					
	May	2	2	2	3	7	4	2	2	7					
	June	2	1	4	6	6	1	2	3	5					
	July	3	2	5	5	4	2	2	2	6					
	August	0	0	1	2	3	2	1	1	3					
	September	3	2	0	0	1	0	6	9	2					
	December	6	0	0	0	2	1	4	10	8					
	Spring	8	8	5	7	20	12	6	10	16	S. 25 2 W.	.15	S. 25 E.	.27	
	Summer	5	3	10	13	13	5	5	6	14	S. 30 33 E.	.27	S. 42 E.	.46½	
	Autumn	3	2	0	0	1	0	6	9	2	N. 42 56 W.	.70	N. 37 W.	.50	
	Winter	18	2	1	2	9	2	9	28	19	N. 43 50 W.	.42	N. 31 W.	.22	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 57 28 W.	.20½			

[1] Separate months for the year 1844 only.
[2] Computed from the resultants for the seasons.

(No. 228(*a*).) **Northeastern China and Japan.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
228(*a*). Yokohama.	January	31	9	7	3	6	18	4	12					
	February	48	2	6	1	8	13	0	9					
	March	44	12	10	2	15	1	0	4					
	April	41	9	12	5	20	2	0	0					
	May	36	18	3	5	23	7	0	1					
	June	23	10	10	11	35	1	0	0					
	July	17	10	0	4	5	0	0	0					
	August	32	2	4	15	28	4	0	0					
	September	23	0	5	12	45	4	0	0					
	October	72	8	1	7	4	1	0	0					
	November	78	5	2	3	0	0	0	2					
	December	37	12	9	1	2	6	1	19					
	Spring	121	39	25	12	58	10	0	5	...	N. 32° 43′ E.	.34½	East.	.08
	Summer	72	22	14	30	68	5	0	0	...	S. 83 44 E.	.23	S. 57° E.	.20
	Autumn	173	13	8	22	49	5	0	2	...	N. 13 30 E.	.43½	N. 2 W.	.14
	Winter	116	23	22	5	16	37	5	40	...	N. 8 44 W.	.44	N. 57½ W.	.24
	The year	482	97	69	69	191	57	5	47	...	N. 19 32 E.	.31½		

(Nos. 229 to 234.) **Pacific Ocean,** west of longitude 180°.

Computed from observations for an aggregate period of 887 days collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			
229. Longitude 125° to 135° E.	Spring	131	35	105	0	98	25	125	48	255	91	144	17	91	24	37	17	129	S. 3° 8′ E.	.22	457
230. Longitude 130° to 140° E.	Summer	5	14	1	3	9	3	1	0	8	8	0	0	0	3	3	1	9	N. 62 36 E.	.22	23
231. Longitude 135° to 140° E.	Spring	47	37	56	39	45	11	18	13	46	12	78	43	50	36	56	5	40	N. 66 10 W.	.14	211
232. Longitude 125° to 150° E.	Autumn	5	2	5	0	3	0	4	1	11	2	4	0	1	18	9	1	5	N. 73 41 W.	.26	24
233. Longitude 140° to 150° E.	Spring	35	24	32	15	30	14	26	8	47	24	28	12	17	15	40	21	17	N. 11 19 E.	.04	135
	Summer	0	0	1	0	2	0	0	0	1	0	3	0	2	0	0	0	2	S. 30 20 W.	.25	11
	Winter	5	1	5	2	0	0	3	1	1	0	1	2	6	12	5	3	0	N. 45 16 W.	.45	16
234. Longitude 150° to 175° E.	Autumn	1	0	1	1	2	0	1	0	0	1	1	0	1	0	0	1	0	N. 70 11 E.	...	10

Addendum to Zone No. 11, latitude 35° to 40°. N.

Place of observation.	Time of the year.	Relative Prevalence and Force of Winds from the Different Points of the Compass.															
		North.		N. E.		East.		S. E.		South.		S. W.		West.		N. W.	
		No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.	No. of obs.	Force.
227(*a*). Pekin, 1870-72.	January	13	2.4	19	2.6	1	2.0	8	2.5	16	2.1	20	2.0	9	3.1	74	4.9
	February	18	2.6	16	2.3	3	2.0	15	2.6	16	2.1	21	2.4	8	2.5	56	4.2
	March	21	2.0	10	2.2	8	2.0	18	2.4	32	2.4	29	2.3	7	2.9	47	3.6
	April	8	2.2	16	2.7	4	2.5	14	2.3	47	2.6	34	2.9	5	3.6	40	4.3
	May	18	2.4	17	3.1	11	2.0	22	2.3	41	2.6	24	3.0	8	2.0	47	4.0
	June	17	1.8	16	2.4	20	2.2	24	2.2	37	2.2	31	2.8	2	2.0	28	2.5
	July	25	2.0	25	2.4	17	1.9	28	2.0	27	2.1	11	1.9	3	1.3	20	2.4
	August	22	2.0	18	2.6	9	2.9	14	2.0	34	2.0	13	2.4	8	2.5	34	2.4
	September	16	2.4	20	2.6	3	2.0	13	2.1	40	2.1	18	2.0	7	2.0	37	3.1
	October	16	2.4	10	2.6	4	2.0	8	2.5	23	2.0	29	2.4	6	2.0	51	3.6
	November	8	2.7	8	2.0	2	2.0	1	2.0	7	2.3	17	2.3	5	2.8	50	4.3
	December	13	2.4	15	3.0	3	2.0	2	2.0	5	2.0	12	2.4	3	3.3	65	4.2
	Spring	47	2.2	43	2.6	23	2.1	54	2.3	120	2.5	87	2.7	20	2.7	134	4.0
	Summer	64	1.9	59	2.5	46	2.2	60	2.1	98	2.1	55	2.6	13	2.3	82	2.4
	Autumn	40	2.5	38	2.6	9	2.0	22	2.2	70	2.1	64	2.3	18	2.2	138	3.7
	Winter	44	2.4	50	2.6	7	2.0	25	2.5	37	2.1	53	2.2	20	2.9	195	4.5
	The year	195	2.2	190	2.5	85	2.1	161	2.3	325	2.2	259	2.4	71	2.7	549	3.9

Observations on the Atlantic Ocean, calculated by the Meteorological Institute of the Netherlands, under Capt. Cornelissens's direction.

Between 15° and 30° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.
Lat. 39°–40° N. (No. of observations 2794.)	Spring	21	14	33	28	3
	Summer	36	8	21	27	8
	Autumn	30	20	20	25	5
	Winter	15	24	29	28	3
Lat. 38°–39° N. (No. of observations 2459.)	Spring	26	15	24	32	4
	Summer	52	4	17	20	6
	Autumn	30	25	22	21	3
	Winter	23	18	28	25	6
Lat. 37°–38° N. (No. of observations 2599.)	Spring	33	20	17	27	4
	Summer	57	7	12	19	5
	Autumn	26	22	27	20	5
	Winter	24	18	28	26	4
Lat. 36°–37° N. (No. of observations 3098.)	Spring	33	17	19	28	5
	Summer	65	5	8	18	3
	Autumn	32	18	21	25	4
	Winter	21	22	26	27	4
Lat. 35°–36° N. (No. of observations 3310.)	Spring	34	15	20	25	6
	Summer	65	6	6	18	5
	Autumn	35	19	15	26	5
	Winter	26	18	27	25	4

East of 15° W. longitude.		Between N. & E.	Between E. & S.	Between S. & W.	Between W. & N.	Calm.
Lat. 39°–40° N. (No. of observations 3010.)	Spring	33	6	24	31	6
	Summer	45	4	16	32	3
	Autumn	30	11	25	28	5
	Winter	30	13	28	25	4
Lat. 38°–39° N. (No. of observations 2752.)	Spring	29	6	24	36	6
	Summer	47	2	14	30	6
	Autumn	32	11	26	26	5
	Winter	28	16	25	25	6
Lat. 37°–38° N. (No. of observations 2309.)	Spring	28	6	26	36	4
	Summer	46	2	12	37	4
	Autumn	32	7	30	25	6
	Winter	24	16	30	23	7
Lat. 36°–37° N. (No. of observations 2394.)	Spring	27	8	24	34	7
	Summer	41	5	12	37	5
	Autumn	24	11	24	27	14
	Winter	23	14	29	26	8
Lat. 35°–36° N. (No. of observations 1507.)	Spring	25	4	25	40	5
	Summer	36	9	13	34	8
	Autumn	20	10	27	35	8
	Winter	26	12	27	31	4

ZONE No. 12.

Latitude 30° to 35° North.

The data for the study of the winds of this zone consist of observations made at over 303 stations on land, for an aggregate period of over 892 years; at sea for over 27 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	5849 days = 15 years 9 months.
United States west of the Mississippi,	121	419 years 6 months.
United States east of the Mississippi,	134	349 years 6 months.
Atlantic Ocean,	....	nearly 11 years 9 months.
Islands of the Atlantic,	7	28 years 9 months.
Mediterranean Sea and Islands,	1	3 years 6 months.
Africa,	14	over 35 years 9 months.
Asia,	26	over 55 years 8 months.

(Nos. 1 to 6.) **Pacific Ocean**, east of longitude 180°.

Computed from observations for an aggregate period of 14 years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Longitude 150° to 165° W.	Spring	58	210	113	285	130	191	65	184	58	155	46	123	35	103	64	131	75	N. 79° 36′ E.	.21	N. 14½° W.	.15	675
	Summer	21	69	27	131	92	133	52	90	33	120	36	60	13	64	13	34	63	S. 58 6 W.	.26	N. 80½ W.	.47	350
	Autumn	62	184	157	380	220	358	255	470	292	491	184	351	99	280	86	176	132	S. 18 46 E.	.23	S. 58½ W.	.20	1392
	Winter	0	9	6	22	7	37	4	7	6	6	0	8	0	7	0	0	2	S. 76 10 E.	.50	S. 88 E.	.24	40
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 65 47 E.	.27	....	...	2457
2. Longitude 140° to 150° W.	Spring	2	7	5	24	15	6	0	10	0	10	1	16	0	12	0	0	12	S. 85 21 E.	.18	S. 89 W.	.07	40
	Summer	11	74	76	174	31	55	14	25	10	15	7	26	12	15	15	22	25	N. 61 30 E.	.50	N. 36½ E.	.32	202
	Autumn	17	71	21	101	26	57	30	52	43	49	24	44	25	26	14	36	13	S. 77 17 E.	.16	S. 77 W.	.09½	216
	Winter	3	5	1	13	15	18	11	14	13	12	0	11	4	14	0	4	1	S. 37 59 E.	.30	S. 16 W.	.23	46
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 38 E.	.25	....	...	504
3. Longitude 135° to 140° W.	Spring	1	14	23	51	14	9	13	13	2	2	0	15	0	2	0	8	4	N. 74 34 E.	.52	N. 83 E.	.17	57
	Summer	17	78	170	189	23	9	7	7	2	24	8	31	11	7	12	21	47	N. 48 14 E.	.58	N. 20½ E.	.29	221
	Autumn	15	74	43	72	13	31	35	42	23	60	11	21	7	18	3	40	7	N. 81 21 E.	.25	S. 46½ W.	11	172
	Winter	0	6	7	7	9	19	4	10	4	13	2	10	0	11	1	7	0	N. 64 55 E.	.20	S. 76½ W.	.15	37
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 44 E.	.35	....	...	487
4. Longitude 130° to 135° W.	Spring	14	53	44	37	17	12	3	8	10	12	11	2	0	2	2	25	7	N. 45 39 E.	.49	N. 51½ E.	.04	86
	Summer	11	65	100	81	20	7	3	7	3	1	3	5	9	3	9	23	18	N. 42 36 E.	.67	N. 35 E.	.22	123
	Autumn	10	108	83	115	28	13	11	16	12	24	16	34	20	27	12	44	17	N. 36 35 E.	.39	S. 88 W.	.09	197
	Winter	10	13	29	55	13	20	15	12	9	8	7	16	3	25	13	6	1	N. 63 37 E.	.27	S. 21½ W.	.21	85
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 45 13 E.	.45	....	...	491
5. Longitude 125° to 130° W.	Spring	43	76	24	8	3	5	9	6	6	2	12	13	5	5	5	62	9	N. 4 9 E.	.55	N. 15 E.	.09	98
	Summer	45	131	54	3	0	0	0	4	4	5	5	6	1	9	20	94	25	N. 4 22 E.	.71	N. 8½ E.	.23½	135
	Autumn	69	147	33	35	11	19	4	10	11	29	15	48	14	37	26	66	30	N. 2 28 W.	.41	S. 29 W.	.07	201
	Winter	28	31	18	26	4	15	3	11	4	28	8	21	9	15	5	28	4	N. 0 1 W.	.20	S. 3½ W.	.27	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 2 19 E.	.47	....	...	520
6. Longitude 115° to 125° W.	Spring	13	6	0	0	0	0	0	0	0	2	0	3	18	9	14	90	3	N. 32 49 W.	.80	N. 50 W.	.19	53
	Summer	76	44	1	3	0	0	1	2	1	8	2	4	5	26	13	142	12	N. 17 12 W.	.78	N. 14½ W.	.20	113
	Autumn	54	101	12	21	9	12	3	3	25	19	0	22	26	53	29	319	44	N. 19 29 W.	.62	N. 65 E.	.09	251
	Winter	14	40	2	6	2	10	3	21	6	34	18	37	8	27	10	76	9	N. 58 20 W.	.31	S. 3½ E.	.38	108
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 27 39 W.	.62	....	...	525

[1] Computed from the resultants for the seasons.

(Nos. 7 to 14.) **California**, south of latitude 35°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs	mos.	Date.
Camp Cady,	Post Surgeon,	1	6	1868 and 1869.
Drum Barracks,	Post Surgeon,	5	2	1864 to 1869 inclusive.
Fort Tejon,	Post Surgeon,	6	4	1855 to 1861 inclusive, 1863 and 1864.
Fort Yuma,	Post Surgeon,	13	3	1850 to 1862 and 1866 to 1869, both inclusive.
Los Angeles,	Post Surgeon,	0	4	1847 and 1848.
Rancho del Chino,	Post Surgeon,	1	2	1851 and 1852.
Rancho del Jurupa,	Post Surgeon,	1	6	1852, 1853 and 1854.
San Diego,	Post Surgeon and Coast Survey,	16	0	1849 to 1866 inclusive.
San Luis Rey,	Post Surgeon,	0	9	1850 and 1851.
Santa Barbara,	Post Surgeon,	0	6	1864.
Santa Catalina Island,	Post Surgeon,	0	3	1864.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction	Force.	Number of days.
7. Fort Tejon.	January	12	15	11	98	122	92	76	113						
	February	8	9	5	87	38	83	32	96						
	March	20	11	2	81	73	85	51	203						
	April	36	25	14	100	126	54	51	156						
	May	168	16	25	77	82	63	69	116						
	June	77	18	24	36	46	47	89	75						
	July	69	18	47	49	33	45	87	74						
	August	101	20	39	61	26	93	102	92						
	September	74	41	8	84	89	93	82	88						
	October	70	18	12	78	111	89	60	142						
	November	12	22	7	57	65	89	111	126						
	December	15	27	7	77	76	97	90	124						
	Spring	224	52	41	258	281	202	171	475	...	S. 88° 35′ W.	.23			
	Summer	247	56	110	146	105	185	278	241	...	N. 70 8 W.	.25½			
	Autumn	156	81	27	219	265	271	253	356	...	S. 72 14 W.	.29½			
	Winter	35	51	23	262	236	272	198	333	...	S. 51 10 W.	.35			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 77 26 W.	.26			
8. Fort Tejon and Santa Barbara.	Spring	226	53	82	273	290	221	200	501	123	S. 86 54 W.	.20½			
	Summer	248	56	126	180	119	226	300	245	144	N. 80 51 W.	.21			
	Autumn	156	81	40	225	278	284	254	356	44	S. 55 21 W.	.18			
	Winter	37	52	23	265	238	273	198	334	14	S. 70 17 W.	.22			
	The year[2]	...	...	...	...	...	...	...	...	...	....	...			
9. Drum Barracks[1] and Los Angeles.	January	102	17	83	38	59	43	92	84	35	....	...	....	...	186
	February	99	18	30	41	54	45	89	107	44	....	...	....	...	170
	March	87	17	45	59	69	52	95	112	34	....	...	....	...	186
	April	70	36	30	41	28	32	58	113	25	....	...	....	...	150
	May	33	19	37	84	38	36	54	91	36	....	...	....	...	155
	June	16	12	27	33	28	22	33	110	29	....	...	....	...	120
	July	19	11	29	71	59	61	33	164	40	....	...	....	...	186
	August	13	7	31	46	23	12	20	177	43	....	...	....	...	155
	September	6	7	30	63	27	20	26	176	47	....	...	....	...	180
	October	25	21	36	46	28	29	72	154	19	....	...	....	...	186
	November	34	35	37	58	28	35	29	110	17	....	...	....	...	150
	December	109	38	67	60	55	48	81	86	7	....	...	....	...	186
	Spring	190	72	112	184	135	120	207	316	95	N. 62 47 W.	.17½	....	...	491
	Summer	48	30	87	150	110	95	86	451	112	N. 67 52 W.	.24	....	...	461
	Autumn	65	63	103	167	83	84	127	440	83	N. 52 21 W.	.23	....	...	516
	Winter	310	73	180	139	168	136	262	277	86	N. 48 58 W.	.18	....	...	542
	The year[2]	...	...	...	...	...	...	...	...	...	N. 59 10 W.	.20½	....	...	2010
10. Ranchodel Chino and Ranchodel Jurupa.	Spring	10	31	26	35	55	529	117	41	...	S. 48 43 W.	.70½	....	...	215
	Summer	0	4	7	13	44	699	172	4	...	S. 50 11 W.	.90	....	...	246
	Autumn	5	154	11	38	1	578	114	41	...	S. 54 3 W.	.53	....	...	243
	Winter	42	212	46	94	46	459	41	122	...	S. 39 59 W.	.23	....	...	271
	The year[2]	...	...	...	...	...	...	...	...	...	S. 50 36 W.	.59	....	...	975

[1] Surface winds and motion of clouds at Drum Barracks for 1869 combined.
[2] Computed from the resultants for the seasons.

(Nos. 11 to 14.) **California.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
11. San Diego. No. of observations.	January	63	218	202	124	68	204	163	81						
	February	180	216	131	230	69	244	195	216						
	March	98	197	200	203	93	274	274	160						
	April	63	220	188	214	157	302	237	142						
	May	49	147	155	214	171	426	233	124						
	June	48	148	188	245	135	494	278	113						
	July	69	178	169	192	89	469	322	118						
	August	62	169	197	175	104	427	328	111						
	September	63	220	243	218	84	393	346	172						
	October	92	238	257	213	123	389	330	170						
	November	81	245	244	268	120	259	285	145						
	December	79	230	221	224	110	261	203	180						
	Spring	210	564	543	631	421	1002	744	426	...	S. 73° 47′ W.	.17			
	Summer	179	495	554	612	328	1390	928	342	...	S. 39 59 W.	.26			
	Autumn	236	703	744	699	327	1041	961	487	...	S. 32 32 W.	.11			
	Winter	322	664	554	578	247	709	561	477	...	S. 49 7 E.	.01			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 47 36 W.	.13			
No. of miles.	Spring	626	318	207	2391	2579	3006	2864	8020	...	N. 89 9 W.	.43			
	Summer	159	319	106	1489	2240	2084	1702	10034	...	N. 73 1 W.	.51			
	Autumn	120	450	153	330	628	1066	878	6055	...	N. 59 12 W.	.62½			
	Winter	409	195	276	1884	1935	1758	1449	4202	...	S. 75 47 W.	.33½			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 77 31 W.	.45½			
12. South-western California.[1]	Spring	579	628	587	913	681	1482	991	1171	218	S. 66 16 W.	.18	S. 8° E.	.01	
	Summer	420	514	663	832	390	1811	1082	1103	256	S. 65 32 W.	.24	S. 59 W.	.07	
	Autumn	383	921	636	954	505	1587	1166	1410	127	S. 78 27 W.	.17½	N. 2½ W.	.03	
	Winter	599	861	639	966	574	1440	911	1065	100	S. 67 18 W.	.11½	N. 74½ E.	.06	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 69 15 W.	.17½			
13. Camp Cady.[2]	January	0	1	10	6	1	8	60	7	0	....	...	....	...	31
	February	0	4	15	5	1	3	56	0	0	....	...	....	...	28
	March	0	3	10	0	1	19	60	0	0	....	...	....	...	31
	April	0	12	8	4	1	18	70	2	0	....	...	....	...	30
	May	0	4	13	1	0	8	89	3	0	....	...	....	...	31
	June	0	0	1	2	10	27	72	0	0	....	...	....	...	30
	July	0	0	7	4	10	14	153	12	0	....	...	....	...	62
	August	0	0	10	7	25	10	145	0	0	....	...	....	...	62
	September	1	1	10	5	18	12	138	0	0	....	...	....	...	60
	October	0	4	18	11	9	5	157	0	0	....	...	....	...	62
	November	0	6	22	7	5	9	149	0	0	....	...	....	...	60
	December	21	18	28	9	5	6	101	17	5	....	...	....	...	62
	Spring	0	19	31	5	2	45	219	5	0	S. 84 22 W.	.63½	N. 67 W.	.01	92
	Summer	0	0	18	13	45	51	370	12	0	S. 78 5 W.	.78	S. 56 W.	.17	154
	Autumn	1	11	50	23	32	26	444	0	0	S. 81 32 W.	.67	S. 47 W.	.05½	182
	Winter	21	23	53	20	7	17	217	24	5	N. 82 8 W.	.42½	N. 58 E.	.23½	121
	The year[3]	...	...	...	...	...	...	...	...	...	S. 83 49 W.	.62	....	...	549
14. Fort Yuma.[2]	January	272	183	78	100	101	97	203	255						
	February	207	135	85	80	63	136	180	190						
	March	176	149	85	128	124	173	310	213						
	April	118	122	89	108	148	277	275	177						
	May	60	68	65	150	194	266	215	108						
	June	50	103	75	195	283	236	198	80						
	July	50	93	119	310	280	210	107	42						
	August	76	146	193	294	290	190	122	32						
	September	146	195	172	201	195	202	176	78						
	October	207	270	153	143	96	182	212	162						
	November	256	192	108	94	70	189	234	277						
	December	358	243	126	81	118	139	245	378						
	Spring	354	339	239	386	466	716	800	498	...	S. 71 35 W.	.25	S. 45½ W.	.11	
	Summer	176	342	387	799	853	636	427	154	...	S. 36 10 W.	.36	S. 10 W.	.29	
	Autumn	609	657	433	438	361	573	622	517	...	N. 27 3 W.	.09½	N. 52½ E.	.15	
	Winter	837	561	289	261	282	372	628	823	...	N. 29 2 W.	.30½	N. 2½ E.	.27	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 88 45 W.	.16			

[1] Observed at Drum Barracks, Fort Tejon, Los Angeles, Ranchos del Chino and Jurupa, San Diego, San Luis Rey, Santa Barbara and Santa Catalina.
[2] Surface winds and motion of clouds in the year 1869 combined.
[3] Computed from the resultants for the seasons.

(Nos. 14(*a*) to 28.) **Arizona,** south of latitude 35°.

Observed by Post Surgeons, as follows:—

Place of observation.	Aggregate length of time. yrs.	mos.	Date.
Camp Bowie,	2	5	1867, 1868 and 1869.
Camp Colorado,	1	0	1869.
Camp Crittenden,	1	0	1869.
Camp Goodwin,	1	1	1868 and 1869.
Camp McDowell,	2	8	1866 to 1869 inclusive.
Camp McPherson,[1]	2	6	1867, 1868 and 1869.
Camp Moore,	0	6	December, 1856, to May, 1857, inclusive.
Camp Skull Valley,	1	0	1867 and 1869.
Camp Verde,	3	6	1860, 1867, 1868 and 1869.
Camp Wallen,	2	11	1866 to 1869 inclusive.
Camp Whipple,	3	1	1865 to 1869 inclusive.
Fort Buchanan,	3	11	1857 to 1861 inclusive.
Fort Grant,[2]	1	11	1860, 1861, 1866 and 1869.
Tubac,	0	5	1867, 1868 and 1869.

Place of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
14(*a*). Camp Colorado.	Spring	4	3	3	20	86	94	4	59	3	S. 35° 49′ W.	.37½	S. 30° W.	.36	
	Summer	20	14	36	26	13	93	61	10	3	S. 49 4 W.	.33½	S. 58 W.	.11½	
	Autumn	29	15	69	20	9	51	52	28	0	N. 89 11 W.	.05	N. 33 E.	.19	
	Winter	14	32	21	20	18	21	14	35	83	N. 16 10 E.	.06	N. 39 E.	.27½	
	The year	67	64	129	86	126	259	131	132	89	S. 46 22 W.	.22	....	...	
15. Camps McPherson and Skull Valley.	January	25	7	2	37	38	76	24	70	...	....	...	....	...	93
	February	32	2	4	50	45	50	31	40	...	....	...	....	...	85
	March	40	4	3	52	56	58	38	28	...	....	...	....	...	93
	April	62	3	2	38	36	67	39	23	...	....	...	....	...	90
	May	7	0	5	56	78	40	61	4	...	....	...	....	...	93
	June	108	9	9	107	203	110	120	50	...	....	...	....	...	120
	July	49	24	28	164	211	114	102	49	...	....	...	....	...	124
	August	50	34	32	143	265	136	91	24	...	....	...	....	...	124
	September	42	33	20	188	151	124	87	49	...	....	...	....	...	120
	October	118	47	12	128	126	125	53	109	...	....	...	....	...	124
	November	77	18	13	138	185	131	68	51	...	....	...	....	...	120
	December	35	18	8	32	72	52	30	29	...	....	...	....	...	93
	Spring	109	7	10	146	170	165	138	55	...	S. 81 30 W.	.35½	....	...	276
	Summer	207	67	69	414	679	360	313	123	...	S. 15 30 W.	.41	....	...	368
	Autumn	237	98	45	454	462	380	208	209	...	S. 17 34 W.	.25	....	...	364
	Winter	92	27	14	119	155	178	85	139	...	S. 50 58 W.	.30½	....	...	271
	The year[3]	...	...	...	...	...	...	...	...	...	S. 41 49 W.	.29½	....	...	1279
16. Camp McDowell.	January	27	10	16	8	1	21	59	14	...	....	...	....	...	62
	February	20	16	7	5	2	29	70	11	...	....	...	....	...	85
	March	13	9	13	7	0	16	70	6	...	....	...	....	...	62
	April	13	3	4	2	0	30	70	7	...	....	...	....	...	60
	May	34	13	14	8	16	68	53	24	...	....	...	....	...	93
	June	22	8	2	1	22	48	82	8	...	....	...	....	...	90
	July	24	2	4	16	46	59	53	15	...	....	...	....	...	93
	August	27	15	8	13	41	30	42	11	...	....	...	....	...	93
	September	16	7	14	8	26	43	52	44	...	....	...	....	...	120
	October	50	14	21	23	52	42	20	8	...	....	...	....	...	124
	November	113	32	13	25	19	17	39	5	...	....	...	....	...	120
	December	101	17	30	6	10	9	77	6	...	....	...	....	...	93
	Spring	60	25	31	17	16	114	193	37	...	S. 88 51 W.	.48½	....	...	215
	Summer	73	25	14	30	109	137	177	34	...	S. 65 22 W.	.45	....	...	276
	Autumn	179	53	48	56	97	102	111	57	...	N. 40 19 W.	.21½	....	...	364
	Winter	148	43	53	19	13	59	206	31	...	N. 52 35 W.	.38	....	...	240
	The year[3]	...	...	...	...	...	...	...	...	...	N. 81 34 W.	.33½	....	...	1095

[1] Camp Date Creek. [2] Fort Breckenridge. [3] Computed from the resultants for the seasons.

(Nos. 17 to 22.)

Arizona.—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
17. Camp Whipple.	January	35	30	9	22	38	88	24	13	...	....	...	....	...	124
	February	28	29	5	10	52	95	22	13	...	....	...	....	...	141
	March	28	18	4	22	38	89	25	16	...	....	...	....	...	124
	April	18	13	2	17	70	61	14	17	...	....	...	....	...	120
	May	16	10	5	7	3	0	3	0	..	....	...	....	...	31
	June	8	15	0	1	33	28	5	6	...	....	...	....	...	90
	July	1	2	2	6	57	28	0	3	...	....	...	....	...	62
	August	11	4	0	6	14	2	0	0	...	....	...	....	...	62
	September	8	8	1	6	9	14	7	6	...	....	...	....	...	60
	October	21	8	0	14	60	56	2	12	...	....	...	....	...	155
	November	17	13	1	7	58	26	9	11	...	....	...	....	...	90
	December	22	11	0	10	9	12	0	8	...	....	...	....	...	62
	Spring	62	41	11	46	111	150	42	33	...	S. 81° 10′ W.	.34	....	...	275
	Summer	20	21	2	13	104	58	5	9	...	S. 58 6 W.	.50	....	...	214
	Autumn	46	29	2	27	127	96	18	29	...	S. 27 2 W.	.38	....	...	305
	Winter	85	70	14	42	99	195	46	34	...	S. 46 43 W.	.27	....	...	327
	The year[2]	...	...	...	...	...	...	...	...	...	S. 53 20 W.	.35	....	...	1121
18. Camp Verde.	Spring	50	14	37	206	62	49	20	34	173	S. 35 43 E.	.30			
	Summer	14	20	19	448	60	47	10	11	109	S. 38 37 E.	.65			
	Autumn	81	29	77	355	150	31	3	3	0	S. 45 12 E.	.62			
	Winter	122	94	16	100	90	16	7	53	138	N. 61 2 E.	.17½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 46 47 E.	.40½			
19. Camps McDowell, Verde and Whipple combined.	Spring	172	80	79	269	189	313	255	104	173	S. 36 54 W.	.23			
	Summer	107	66	35	491	273	242	192	54	109	S. 2 38 E.	.56			
	Autumn	306	111	127	438	374	229	132	89	0	S. 21 41 E.	.24			
	Winter	355	207	83	161	202	270	259	118	138	N. 67 41 W.	.11½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 7 59 W.	.23½			
20. Central Arizona.[1]	Spring	281	87	89	415	359	478	393	159	173	S. 36 43 W.	.27½	N. 88° W.	.07	
	Summer	314	133	104	905	952	602	505	177	109	S. 8 21 W.	.39½	S. 13 E.	.17	
	Autumn	543	209	172	892	836	609	340	298	0	S. 1 46 W.	.25½	S. 70 E.	.09	
	Winter	447	234	97	280	357	448	344	257	138	S. 78 31 W.	.15	N. 16 W.	.20	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 22 45 W.	.24			
21. Fort Buchanan.	January	39	109	49	23	47	65	22	13	...	....	...	....	...	124
	February	23	64	77	32	56	54	21	12	..	....	...	....	...	113
	March	66	53	58	49	29	103	40	23	...	....	...	....	...	124
	April	19	50	43	31	47	113	50	7	...	....	...	....	...	120
	May	24	38	31	36	76	109	40	18	...	....	...	....	...	124
	June	19	25	52	32	67	76	70	13	...	....	...	....	...	120
	July	34	36	25	37	54	66	23	4	...	....	...	....	...	93
	August	29	54	48	47	56	94	32	12	...	....	...	....	...	124
	September	24	43	65	66	36	93	21	2	...	....	...	....	...	120
	October	31	70	59	45	55	27	3	9	...	....	...	....	...	124
	November	40	59	56	43	56	65	16	15	...	....	...	....	...	120
	December	48	89	43	32	33	53	5	7	...	....	...	....	...	124
	Spring	109	141	132	116	152	325	130	48	...	S. 19 53 W.	.20½	....	...	368
	Summer	82	115	125	116	177	236	125	29	...	S. 5 40 W.	.24½	....	...	337
	Autumn	95	172	180	154	147	185	40	26	...	S. 55 33 E.	.27	....	...	364
	Winter	110	262	169	87	136	172	48	32	...	S. 89 41 E.	.22	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	S. 31 8 E.	.17	....	...	1430
22. Fort Grant.	January	19	14	22	15	23	23	37	33	...	....	...	....	...	62
	February	43	2	18	9	21	24	30	21	...	....	...	....	...	56
	March	26	10	25	19	14	38	40	14	...	....	...	....	...	62
	April	15	4	25	15	26	28	36	31	...	....	...	....	...	60
	May	15	3	15	23	27	34	46	23	...	....	...	....	...	62
	June	12	3	12	15	18	44	67	9	...	....	...	....	...	60
	July	39	9	5	0	0	35	4	1	...	....	...	....	...	31
	August	24	1	5	0	0	36	21	6	...	....	...	....	...	31
	September	21	5	27	10	54	52	8	3	...	....	...	....	...	60
	October	7	26	74	14	14	39	10	2	...	....	...	....	...	62
	November	36	9	8	13	23	20	58	14	...	....	...	....	...	60
	December	62	32	37	24	42	23	31	28	...	....	...	....	...	93
	Spring	56	17	65	57	67	100	122	68	...	S. 63 22 W.	.25	....	...	184
	Summer	75	13	22	15	18	115	92	16	...	S. 84 14 W.	.39	....	...	122
	Autumn	64	40	109	37	91	111	76	19	...	S. 2 51 W.	.17	....	...	182
	Winter	124	48	77	48	86	70	98	82	...	N. 52 31 W.	.12	....	...	211
	The year[2]	...	...	...	...	...	...	...	...	...	S. 71 10 W.	.19	....	...	699

[1] Observed at Camps McDowell, McPherson, Skull Valley, Verde and Whipple.
[2] Computed from the resultants for the seasons.

(Nos. 23 to 28.) **Arizona.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
23. Camp Wallen.	January	5	13	28	4	1	16	186	26	...	....	...	....	...	93
	February	3	15	40	8	0	12	159	18	...	....	...	....	...	85
	March	3	6	21	0	2	7	209	31	...	....	...	....	...	93
	April	0	9	16	0	2	25	198	20	...	....	...	....	...	90
	May	3	5	13	3	9	45	187	14	...	....	...	....	...	93
	June	3	1	19	6	7	43	184	7	...	....	...	....	...	90
	July	2	10	30	11	35	29	155	7	...	....	...	....	...	93
	August	5	7	28	13	42	11	162	11	...	....	...	....	...	93
	September	6	15	23	9	14	23	167	13	...	....	...	....	...	90
	October	0	3	1	0	0	7	171	4	...	....	...	....	...	62
	November	5	6	23	3	2	8	218	5	...	....	...	....	...	90
	December	2	10	18	1	0	3	235	10	...	....	..	....	...	93
	Spring	6	20	50	3	13	77	594	65	...	S. 89° 41′ W.	.76	....	...	276
	Summer	10	18	77	30	84	83	501	25	...	S. 75 10 W.	.58	....	...	276
	Autumn	11	24	47	12	16	38	556	22	...	S. 89 9 W.	.72½	....	...	242
	Winter	10	38	86	13	1	31	580	54	...	N. 85 29 W.	.64	....	...	271
	The year[3]	...	...	...	...	...	...	...	...	...	S. 87 38 W.	.67	....	...	1065
24. Arizona South of latitude 32°.[1]	Spring	123	180	234	125	186	531	752	126	...	S. 67 57 W.	.35½	S. 73° W.	.13	736
	Summer	110	169	274	177	311	411	684	66	...	S. 48 7 W.	.29½	S. 20 W.	.09	705
	Autumn	140	295	340	218	225	338	670	64	...	S. 48 16 W.	.14½	N. 78 E.	.08	727
	Winter	177	386	353	151	273	342	692	154	...	S. 78 33 W.	.12½	N. 48½ E.	.12	875
	The year[3]	...	...	...	...	...	...	...	...	...	S. 59 43 W.	.23	....	...	3043
25. Camp Goodwin.	January	25	4	6	17	21	8	6	6	...	....	...	....	...	31
	February	9	6	4	8	25	13	7	12	...	....	...	....	...	28
	March	13	5	6	20	46	56	25	15	...	....	...	....	...	62
	April	3	1	5	13	11	21	25	11	...	....	...	....	...	30
	May	0	0	23	9	10	12	37	0	...	....	...	....	...	31
	June	2	8	25	19	6	14	16	0	...	....	...	....	...	30
	July	2	10	27	10	11	8	20	5	...	....	...	....	...	31
	August	10	14	13	12	7	9	18	10	...	....	...	....	...	31
	September	14	11	16	19	11	3	8	8	...	....	...	....	...	30
	October	13	9	12	18	15	6	13	7	...	....	...	....	...	31
	November	25	9	4	1	7	7	27	10	...	....	...	....	...	30
	December	33	4	5	8	20	10	8	5	...	....	...	....	...	31
	Spring	16	6	34	42	67	89	87	26	...	S. 39 41 W.	.43	....	...	123
	Summer	14	32	65	41	24	31	54	15	...	S. 47 23 E.	.15	....	...	92
	Autumn	52	29	32	38	33	16	48	25	...	N. 7 9 E.	.07	....	...	91
	Winter	67	14	15	33	66	31	21	23	...	S. 31 11 W.	.08	....	...	90
	The year[3]	...	...	...	...	...	...	...	...	...	S. 30 15 W.	.10	....	...	396
26. Fort Grant and Camp Goodwin.	Spring	72	23	99	99	134	189	209	94	...	S. 50 45 W.	.31½	....	...	307
	Summer	89	44	87	56	42	146	146	31	...	S. 69 31 W.	.19	....	...	214
	Autumn	116	69	141	75	124	127	124	44	...	S. 1 41 W.	.09	....	...	273
	Winter	191	62	92	81	152	101	119	105	...	N. 68 22 W.	.08½	....	...	301
	The year[3]	...	...	...	...	...	...	...	...	...	S. 57 24 W.	.15	....	...	1095
27. Camp Bowie.	January	7	12	48	27	60	63	27	0	...	....	...	....	...	62
	February	6	26	32	8	14	56	23	6	...	....	...	....	...	57
	March	3	7	27	19	25	82	35	0	...	....	...	....	...	62
	April	10	26	9	12	80	38	5	0	...	....	...	....	...	60
	May	2	6	21	5	25	86	36	3	...	....	...	....	...	62
	June	0	1	21	15	15	100	28	0	...	....	...	....	...	60
	July	0	1	25	32	14	104	10	0	...	....	...	....	...	62
	August	8	30	63	27	36	82	24	5	...	....	...	....	...	93
	September	4	15	75	33	46	75	19	3	...	....	...	....	...	90
	October	3	35	58	49	45	70	11	8	...	....	...	....	...	93
	November	8	16	34	20	59	89	34	8	...	....	...	....	...	90
	December	13	17	73	18	52	75	28	3	...	....	...	....	...	93
	Spring	15	39	57	36	130	206	76	3	...	S. 23 55 W.	.50	....	...	184
	Summer	8	32	109	74	65	286	62	5	...	S. 16 22 W.	.46	....	...	215
	Autumn	15	66	167	102	150	234	64	19	...	S. 7 49 E.	.38½	....	...	273
	Winter	26	55	153	53	126	194	78	9	...	S. 1 57 E.	.33	....	...	212
	The year[3]	...	...	...	...	...	...	...	...	...	S. 9 30 W.	.41	....	...	884
28. South-eastern Arizona.[2]	Spring	199	213	332	305	454	775	471	161	...	S. 29 57 W.	.30	S. 64 W.	.13	
	Summer	179	192	331	246	284	668	333	65	...	S. 20 18 W.	.26½	S. 54 W.	.07	
	Autumn	229	307	489	347	455	557	242	100	...	S. 22 59 E.	.23	S. 86 E.	.12½	
	Winter	389	419	438	297	560	569	338	237	...	S. 6 30 E.	.10	N. 23 E.	.11½	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 9 43 W.	.20½	....	...	2166

[1] Camps Crittenden and Wallen, Fort Buchanan and Tubac; surface winds and motion of clouds combined at Camp Crittenden. [2] Fort Grant, Camps Goodwin, Bowie and Moore.
[3] Computed from the resultants for the seasons.

(Nos 29 to 43.) **New Mexico**, south of latitude 35°.

Observed at the following military posts by the surgeons in charge, viz. :—

Place of observation.	Aggregate length of time. yrs.	mos.	Date.
Camp Rio Mimbres,	0	3	1864.
Dona Ana,	0	8	1851 and 1855.
Fort Bayard,	2	9	1867, 1868 and 1869.
Fort Conrad,	2	6	1851 to 1854 inclusive.
Fort Craig,	11	4	1855 to 1862 and 1865 to 1869, both inclusive.
Fort Fillmore,	9	2	1851 to 1861 inclusive.
Fort McRae,	2	4	1864, 1865, 1868 and 1869.
Fort Stanton,	8	9	1855 to 1861 and 1866 to 1869, both inclusive.
Fort Sumner,	4	11	1864 to 1869 inclusive.
Fort Thorn,	4	4	1854 to 1858 inclusive.
Fort Webster,	1	11	1852 and 1853.
Fort West,	0	8	1863.
Los Pinos,	2	8	1863 to 1866 inclusive.
Socorro,	1	9	1849, 1850 and 1851.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
29. Fort Bayard.	January	13	20	8	27	10	8	33	67	...	....	...	....	...	62
	February	15	31	14	30	4	12	19	46	...	....	...	....	...	57
	March	57	31	13	18	17	23	52	66	...	....	...	....	...	93
	April	46	24	13	36	21	20	48	62	...	....	...	....	...	90
	May	46	28	8	29	25	43	53	47	...	....	...	....	...	93
	June	27	10	31	41	9	30	67	54	...	....	...	....	...	90
	July	13	23	62	73	16	19	17	47	...	....	...	....	...	93
	August	26	49	51	54	23	24	16	36	...	....	...	....	...	93
	September	18	50	35	64	13	18	22	50	...	....	...	....	...	90
	October	42	38	33	42	14	23	40	47	...	....	...	....	...	93
	November	29	35	14	17	3	22	13	47	...	....	...	....	...	60
	December	15	49	30	38	11	26	49	61	...	....	...	....	...	93
	Spring	149	83	34	83	63	86	153	175	...	N. 82° 56′ W.	.22½	....	...	276
	Summer	66	82	144	168	48	73	100	137	...	N. 88 4 E.	.09	....	...	276
	Autumn	89	123	82	123	30	63	75	144	...	N. 16 34 E.	.16½	....	...	243
	Winter	43	100	52	95	25	46	101	174	...	N. 30 43 W.	.20½	....	...	212
	The year[2]	...	...	...	...	...	...		...	...	N. 38 52 W.	.12	....	...	1007
30. Fort Thorn.	Spring	116	37	12	15	65	181	490	161	...	N. 85 37 W.	.63½			
	Summer	74	156	162	98	95	112	374	101	...	N. 86 11 W.	.15½			
	Autumn	141	145	115	95	96	185	422	354	...	N. 68 55 W.	.36			
	Winter	165	64	28	42	75	156	480	305	...	N. 73 18 W.	.56			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 78 9 W.	.42½			
31. Fort Webster.	Spring	60	20	37	17	20	97	299	160	...	N. 78 21 W.	.60			
	Summer	54	73	64	66	63	114	167	92	...	S. 82 34 W.	.22			
	Autumn	124	34	39	26	62	49	146	213	...	N. 65 40 W.	.39½			
	Winter	122	37	19	7	19	34	85	171	...	N. 39 8 W.	.58			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 65 18 W.	.42			
32. South-western New Mexico.[1]	Spring	377	160	123	150	241	462	1071	542	...	N. 82 6 W.	.46	S. 76° W.	.14½	
	Summer	238	311	373	335	241	362	727	354	...	S. 86 22 W.	.14	S. 57½ E.	.21	
	Autumn	368	304	236	244	208	351	715	732	...	N. 61 11 W.	.31	N. 44 E.	.07	
	Winter	330	201	99	144	119	236	666	650	...	N. 60 11 W.	.45	N. 31 W.	.14½	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 71 13 W.	.33	....	...	3624

[1] Observed at Forts Bayard, Webster, Thorn and West, and Camp Rio Mimbres.
[2] Computed from the resultants for the seasons.

(Nos. 33 to 37.) **New Mexico.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
33. Fort Craig.	January	271	132	58	43	122	155	112	130						
	February	152	124	35	57	197	178	125	127						
	March	103	112	34	53	222	246	122	126						
	April	117	125	46	60	262	253	191	120						
	May	81	75	49	90	263	250	173	124						
	June	95	77	52	112	212	212	71	90						
	July	77	127	63	142	208	198	62	76						
	August	117	112	77	110	238	236	129	117						
	September	202	112	58	93	240	268	164	143						
	October	289	134	53	81	242	112	159	149						
	November	303	167	60	86	163	186	147	162						
	December	393	177	46	62	139	150	166	196						
	Spring	301	312	129	203	747	749	486	370	...	S. 50° 55′ W.	.30½			
	Summer	289	316	192	364	658	646	262	283	...	S. 20 27 W.	.23½			
	Autumn	794	413	171	260	645	566	470	454	...	N. 71 53 W.	.15			
	Winter	816	433	139	162	458	483	403	453	...	N. 43 43 W.	.22			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 71 24 W.	.16			
34. Fort Conrad.	January	98	35	14	7	42	17	81	43						
	February	81	40	9	5	54	18	94	15						
	March	52	35	12	9	83	20	131	10						
	April	32	18	8	5	38	22	80	9						
	May	38	32	8	3	46	26	38	6						
	June	16	3	21	8	39	6	47	5						
	July	18	23	19	3	35	18	32	3						
	August	40	15	10	12	29	34	24	7						
	September	21	31	10	6	40	30	45	12						
	October	54	65	17	23	19	32	85	53						
	November	65	31	13	16	26	44	85	39						
	December	87	32	24	10	51	31	63	52						
	Spring	122	85	28	17	167	68	249	25	...	S. 82 45 W.	.28½			
	Summer	74	41	50	23	103	58	103	15	...	S. 51 50 W.	.16			
	Autumn	140	127	40	45	85	106	215	104	...	N. 61 4 W.	.27			
	Winter	266	107	47	22	147	66	238	110	...	N. 46 51 W.	.31			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 71 23 W.	.23			
35. Fort McRae.	Spring	31	45	71	47	58	126	180	35	0	S. 59 33 W.	.31			
	Summer	1	24	53	48	21	60	61	16	4	S. 9 2 W.	.24			
	Autumn	15	85	90	89	35	121	62	27	0	S. 27 27 E.	.19			
	Winter	30	85	55	38	34	53	81	35	0	N. 4 20 W.	.04			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 27 41 W.	.14			
36. Fort Stanton.	January	35	24	62	15	3	44	322	216						
	February	30	17	41	23	8	86	365	177						
	March	9	24	59	48	9	99	385	152						
	April	17	29	94	65	9	114	312	136						
	May	39	11	124	85	49	83	319	82						
	June	2	15	109	105	22	76	184	40						
	July	8	14	160	61	22	54	224	45						
	August	12	45	144	105	46	106	166	56						
	September	26	43	103	64	28	97	219	114						
	October	12	26	75	75	19	97	206	184						
	November	35	14	84	55	15	69	250	203						
	December	34	11	31	15	4	40	394	222						
	Spring	65	64	277	198	67	296	1016	370	...	S. 86 30 W.	.30			
	Summer	22	74	413	271	90	236	574	141	...	S. 33 47 W.	.18			
	Autumn	73	83	262	194	62	263	675	501	...	N. 82 25 W.	.36			
	Winter	99	52	134	53	15	170	1081	615	...	N. 74 26 W.	.67			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 87 35 W.	.35			
37. Southern Central New Mexico.[1] Surface wind.	Spring	519	506	505	465	1039	1239	1931	800	0	S. 69 50 W.	.33	S. 42° W.	.12	
	Summer	386	455	708	706	872	1000	1000	455	4	S. 25 29 W.	.21	S. 39 E.	.22	
	Autumn	1022	708	563	588	827	1056	1422	1086	0	N. 78 20 W.	.20½	N. 22 E.	.07	
	Winter	1211	677	375	275	654	772	1803	1213	0	N. 61 54 W.	.35	N. 22 W.	.21	
	The year[2]	...	...	...		...	...	...	...	...	S. 83 59 W.	.23			
Motion of clouds.	Spring	7	4	7	33	13	14	26	34	...	S. 65 13 W.	.21½	N. 70 E.	.07	
	Summer	2	3	21	10	16	18	35	8	...	S. 41 43 W.	.31	S. 23 E.	.13	
	Autumn	2	2	17	11	14	21	44	6	...	S. 51 52 W.	.40	S. 23 W.	.15	
	Winter	5	11	16	6	2	9	40	19	...	N. 66 49 W.	.32	N. 10 W.	.24	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 20 W.	.27½			

[1] Observed at Forts Conrad, Craig, McRae and Stanton. [2] Computed from the resultants for the seasons.

(Nos. 38 to 43.) **New Mexico.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
38. Fort Fillmore.	January	112	147	131	24	42	66	180	91						
	February	42	108	157	76	34	89	172	68						
	March	26	57	160	116	99	116	175	78						
	April	8	59	114	110	114	141	197	59						
	May	20	27	100	144	158	165	155	54						
	June	13	32	62	122	180	128	123	54						
	July	8	26	98	164	190	153	104	19						
	August	19	11	114	209	192	184	102	14						
	September	9	26	135	119	149	122	189	11						
	October	58	93	199	78	90	96	209	104						
	November	97	129	177	46	39	74	195	111						
	December	105	155	159	46	38	80	186	111						
	Spring	54	143	374	370	371	422	527	191	...	S. 19° 17′ W.	.27½			
	Summer	40	69	274	495	562	465	329	87	...	S. 2 26 W.	.47			
	Autumn	164	248	511	243	278	292	593	226	...	S. 32 45 W.	.07			
	Winter	259	410	447	146	114	235	538	270	...	N. 8 45 W.	.15			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 15 4 W.	.17			
39. Southern New Mexico.[1]	Spring	57	158	377	396	379	468	531	198	...	S. 18 54 W.	.28	S. 23° W.	.13	
	Summer	46	113	286	572	585	536	350	140	...	S. 2 53 W.	.43½	S. 4½ E.	.28	
	Autumn	164	248	511	243	278	292	593	226	...	S. 32 45 W.	.07½	N. 1½ E.	.09	
	Winter	259	410	447	146	114	235	538	270	...	N. 8 46 W.	.15	N. 4 E.	.30½	3349
	The year	526	929	1621	1357	1356	1531	2012	834	...	S. 15 22 W.	.16½			
40. Socorro.	Spring	67	47	41	93	113	67	59	76	...	S. 15 35 W.	.13	....	...	153
	Summer	31	41	38	130	158	96	70	77	...	S. 9 20 W.	.32	....	...	184
	Autumn	98	16	30	35	51	43	53	57	...	N. 52 59 W.	.19	....	...	121
	Winter	169	69	86	46	57	29	54	136	...	N. 0 57 W.	.31½	....	...	180
	The year[4]	...	...	...	...	...	...	...	...	...	S. 86 10 W.	.06	....	...	638
41. Los Pinos.	January	80	62	24	21	50	50	26	30	...	....	...	....	...	124
	February	19	47	22	33	57	37	21	19	...	....	...	....	...	85
	March	11	20	20	36	78	64	54	89	...	....	...	....	...	124
	April	6	21	10	27	42	30	21	23	...	....	...	....	...	60
	May	16	8	20	70	121	36	8	0	...	....	...	....	...	93
	June	9	3	6	26	74	52	3	9	...	....	...	....	...	60
	July	3	0	0	28	87	50	3	6	...	....	...	....	...	62
	August	0	1	0	13	103	51	0	0	...	....	...	....	...	62
	September	3	4	3	37	64	50	9	10	...	....	...	....	...	60
	October	32	34	16	16	61	48	20	54	...	....	...	....	...	93
	November	17	5	49	66	43	55	20	17	...	....	...	....	...	90
	December	43	43	20	23	19	10	4	24	...	....	...	....	...	62
	Spring	33	49	50	133	241	130	83	112	...	S. 89 15 W.	.30	....	...	277
	Summer	12	4	6	67	264	153	6	15	...	S. 9 52 W.	.76	....	...	184
	Autumn	52	43	68	119	168	153	49	81	...	S. 8 14 W.	.30½	....	...	243
	Winter	142	152	66	77	126	97	51	73	...	N. 47 26 E.	.10	....	...	271
	The year[4]	...	...	...	...	...	...	...	..	...	S. 23 9 W.	.27	....	...	975
42. Central New Mexico.[2]	Spring	100	96	91	226	354	197	142	188	...	S. 15 10 W.	.26	S. 15½ W.	.06½	430
	Summer	43	45	44	197	422	249	76	92	...	S. 9 41 W.	.52	S. 6½ W.	.33	368
	Autumn	150	59	98	154	219	196	102	138	...	S. 26 49 W.	.18	N. 48 W.	04	364
	Winter	311	221	152	123	183	126	105	209	...	N. 11 47 E.	.18	N. 13½ E.	.37	451
	The year[4]	...	...	...	...	...	...	...	...	...	S. 14 57 W.	.19	....	...	1613
43. Eastern New Mexico.[3]	January	28	45	44	29	94	97	98	29	0	....	...	....	...	155
	February	37	44	59	48	92	54	56	35	0	....	...	....	...	141
	March	15	38	45	58	87	85	88	45	0	....	...	....	...	155
	April	76	64	47	42	92	93	81	45	0	....	...	....	...	180
	May	44	38	41	35	118	77	66	48	0	....	...	....	...	155
	June	19	37	23	58	147	83	52	28	0	....	...	....	...	150
	July	23	14	41	70	187	67	9	13	41	....	...	....	...	155
	August	17	14	26	40	180	76	11	9	0	....	...	....	...	124
	September	29	18	47	53	180	111	26	7	0	....	...	....	...	150
	October	51	19	69	50	153	72	43	8	0	....	...	....	...	155
	November	25	25	44	19	122	62	123	20	0	....	...	....	...	150
	December	50	18	31	34	93	17	105	23	0	....	...	....	...	155
	Spring	135	140	133	135	297	255	235	138	0	S. 37 33 W.	.21	N. 18 W.	.15½	490
	Summer	59	65	90	168	514	226	72	50	41	S. 1 5 W.	.50½	S. 21½ E.	.21	429
	Autumn	105	62	160	122	455	245	192	35	0	S. 10 28 W.	.40	S. 5½ E.	.08	455
	Winter	115	107	134	111	279	168	259	87	0	S. 34 W.	.21½	N. 16½ W.	.14	451
	The year[4]	...	...	...	...	...	...	...	...	...	S. 14 52 W.	.32	....	...	1825

[1] Observed at Dona Ana and Fort Fillmore. [2] Los Pinos and Socorro. [3] Fort Sumner.
[4] Computed from the resultants for the seasons.

(Nos. 44 to 72.) **Texas,** north of latitude 30°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Austin,	J. Van Nostrand & others,[1]	22	10	1849 to 1851 and 1854 to 1869, both inclusive.[2]
Austin Barracks,	Post Surgeon,	2	10	1851, 1852, 1861, 1862, 1866 and 1867.
Bastrop,	J. D. Cunningham,	0	1	1859.
Bonham,	Prof. Solomon Sias,	0	5	1859 and 1860.
Boston,	G. Freese,	1	9	1859, 1860 and 1861.
Bremend,	....	0	9	1869.
Buffalo Springs,	Post Surgeon,	1	4	1867, 1868 and 1869.
Burkeville,	Dr. N. P. West,	5	5	1856 to 1861 inclusive.
Camp Concordia,	Post Surgeon,	1	0	1868 and 1869.
Camp Colorado,	Post Surgeon,	3	2	1856 to 1859 inclusive.
Camp Cooper,	Post Surgeon,	1	3	1857 and 1859.
Camp Hudson,	Post Surgeon,	1	2	1860 and 1861.
Camp Quitman,	Post Surgeon,	2	4	1858 to 1861 inclusive.
Camp Stockton,	Post Surgeon,	1	3	1860 and 1861.
Camp Verde,	Post Surgeon,	4	0	1856 and 1860 inclusive.
Chappell Hill,	W. H. Gantt,	0	7	1866 and 1867.
Concordia,	Post Surgeon,	1	0	1868 and 1869.
Cross Roads,	F. S. Wade,	1	2	1859 and 1860.
Dallas,	John M. Crockett,	0	6	1859.
Fort Belknap,	Post Surgeon,	6	8	1851 to 1859 inclusive.
Fort Bliss,	Post Surgeon,	9	4	1850, 1851, 1854 to 1861 inclusive, 1866, 1867 and 1869.
Fort Chadbourne,	Post Surgeon,	8	4	1852 to 1861 inclusive.
Fort Croghan,	Post Surgeon,	4	3	1849 to 1853 inclusive.
Fort Davis,	Post Surgeon,	7	2	1854 to 1861 inclusive, and 1869.
Fort Gates,	Post Surgeon,	2	3	1849, 1850 and 1851.
Fort Graham,	Post Surgeon,	3	6	1849 to 1853 inclusive.
Fort Lancaster,	Post Surgeon,	4	8	1856 to 1861 inclusive.
Fort McKavett,	Post Surgeon,	6	2	1852 to 1859 inclusive.
Fort Martin Scott,	Post Surgeon,	2	7	1849 to 1852 inclusive.
Fort Mason,	Post Surgeon,	5	9	1852, 1853 and 1856 to 1861 inclusive.
Fort Richardson,	Post Surgeon,	1	1	1868 and 1869.
Fort Terrett,	Post Surgeon,	1	9	1852 and 1853.
Fort Worth,	Post Surgeon,	3	10	1849 to 1853 inclusive.
Franklin,	Post Surgeon,	1	7	1860 and 1865.
Gilmer,	J. M. Glasco,	4	2	1859 to 1861 and 1867 to 1869, both inclusive.
Greenville,	Dr. R. De Jernett,	0	7	1860.
Huntsville,	T. Gibbs,	0	2	1854 and 1856.
Jefferson,	W. T. Epperson,	0	1	1859.
Kaufman,	James Brown and J. T. Rayal,	1	3	1859 and 1866.
Larissa,	F. L. Yoakum,	2	0	1858 and 1859.
Long Point,	M. Rutherford,	0	3	1867.
Mine Creek,	....	1	0	1869.
Palestine,	....	0	3	1869.
Phantom Hill,	Post Surgeon,	2	1	1851, 1852 and 1853.
Preston,	....	0	10	1859 and 1860.
Round Top,	Bruno Shuman,	1	4	1860 and 1861.
Springfield,	T. A. Turner,	0	1	1859.
Tarrant,	Dr. B. L. D'Spain and J. M. Ewing,	0	11	1859 and 1860.
Turner's Point,	J. Rayal,	0	2	1861.
Union Hill,	Dr. W. H. Gantt,	3	11	1857 to 1861 inclusive.
Waco,	Edward Merrill, M.D.,	2	0	1867, 1868 and 1869.
Washington,	B. H. Rucker,	3	10	1856 to 1859 inclusive.
Webberville,	....	1	5	1859, 1860 and 1861.
Wheelock,	....	1	8	1859, 1860 and 1861.

[1] Dr. S. K. Jennings, J. W. Glenn, Swante Palm.

[2] Two sets of observations in several of the years.

(Nos. 44 to 50.) **Texas.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
44. Fort Bliss.	January	111	113	88	65	35	105	213	226	0					
	February	71	85	71	116	66	138	215	140	0					
	March	49	74	97	70	66	138	185	181	0					
	April	49	48	72	52	37	92	180	166	0					
	May	78	77	55	73	54	115	150	120	53					
	June	27	30	69	75	128	104	166	82	65					
	July	58	70	161	139	119	121	132	85	0					
	August	143	110	159	136	84	105	109	41	59					
	September	132	117	166	174	71	150	72	73	69					
	October	156	159	183	93	45	103	141	123	56					
	November	126	114	116	84	39	113	208	205	32					
	December	190	110	102	55	27	102	291	231	3					
	Spring	176	199	224	195	157	345	515	467	53	N. 79° 34′ W.	.25½			
	Summer	228	210	389	350	331	330	407	208	124	S. 0 29 W.	.11			
	Autumn	414	390	465	351	155	366	421	401	157	N. 4 42 E.	.10			
	Winter	372	308	261	236	128	345	719	597	3	N. 57 23 W.	.29½			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 14 27 W.	.13	....	...	3409
45. Camp Quitman.	Spring	47	36	29	74	22	74	207	135	...	N. 80 34 W.	.40			
	Summer	18	37	86	163	93	45	56	51	...	S. 32 56 E.	.35			
	Autumn	43	45	36	201	53	19	93	54	...	S. 34 21 E.	.33½			
	Winter	125	54	24	81	18	45	201	259	...	N. 51 6 W.	.47			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 61 52 W.	.11	....	...	853
46. Western Texas.[1]	Spring	283	289	306	326	225	541	929	738	97	N. 81 6 W.	.29½	N. 85° W.	.16	
	Summer	292	273	508	556	517	450	491	313	124	S. 7 4 E.	.15	S. 39½ E.	.23½	
	Autumn	517	492	567	594	282	432	569	493	157	N. 28 30 E.	.06	N. 82½ E.	.16	
	Winter	559	412	317	345	179	457	1063	944	96	N. 57 22 W.	.33	N. 44 W.	.21	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 76 38 W.	.13½			
47. Fort Davis.	Spring	86	80	46	43	127	209	106	72	...	S. 56 57 W.	.26½	S. 5 E.	.05	
	Summer	45	91	78	112	111	268	131	126	...	S. 46 4 W.	.27	S. 19 E.	.09½	
	Autumn	201	85	55	88	187	247	196	138	...	S. 77 22 W.	.25	N. 22½ W.	.04½	
	Winter	161	109	67	58	143	214	201	138	...	N. 89 56 W.	.24½	N. 10 W.	.10	2618
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 43 W.	.24½			
48. Fort Lancaster and Camp Stockton.	Spring	130	35	31	179	437	38	82	52	...	S. 5 15 E.	.40½	N. 72½ E.	.01½	
	Summer	61	21	54	394	597	5	9	16	...	S. 22 14 E.	.74	S. 42½ E.	.37	
	Autumn	171	79	57	429	471	102	60	112	...	S. 24 14 W.	.39	N. 73 W.	.19	
	Winter	208	39	35	198	370	106	80	162	...	S. 15 54 W.	.20½	N. 21 W.	.22½	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 86 29 E.	.41	....	...	2162
49. Camp Hudson.	January	13	15	3	159	3	9	1	61	...	....	...	....	...	93
	February	10	14	12	131	16	7	28	35	...	....	...	....	...	85
	March	23	1	4	92	2	0	7	39	...	....	...	....	...	62
	April	21	4	15	94	4	0	8	7	...	....	...	....	...	60
	May	15	3	26	194	13	3	3	11	...	....	...	....	...	93
	June	7	2	14	228	12	3	0	0	...	....	...	....	...	90
	July	0	0	4	154	27	0	0	1	...	....	...	....	...	62
	August	6	4	21	178	56	0	0	9	...	....	...	....	...	93
	September	7	6	12	199	5	1	3	20	...	....	...	....	...	90
	October	59	12	18	110	46	9	1	34	...	....	...	....	...	93
	November	32	1	6	124	4	5	13	65	...	....	...	....	...	90
	December	26	0	15	115	3	2	3	88	...	....	...	....	...	93
	Spring	59	8	45	380	19	3	18	57	...	S. 49 1 E.	.58	N. 24½ W.	.01½	215
	Summer	13	6	39	560	95	3	0	10	...	S. 42 32 E.	.88	S. 31½ E.	.30	245
	Autumn	98	19	36	433	55	15	17	119	...	S. 54 9 E.	.38	N. 37½ W.	.22	273
	Winter	49	29	30	405	22	18	32	184	...	S. 53 29 E.	.26½	N. 8 W.	.18	71
	The year[2]	...	...	...	...	...	...	...	...	...	S. 47 47 E	.52	....	...	1004
50. Fort Chadbourne.	January	178	42	6	73	127	79	63	142						
	February	181	32	26	74	125	87	44	118						
	March	167	33	14	108	199	66	50	71						
	April	106	21	31	105	252	42	48	36						
	May	132	29	63	187	215	69	38	44						
	June	23	56	21	317	285	27	8	25						
	July	21	15	72	271	304	33	8	12						
	August	52	54	89	304	291	11	18	25						
	September	68	57	59	260	290	18	19	30						
	October	108	101	66	185	202	60	22	93						
	November	152	52	30	77	170	51	69	171						
	December	195	55	11	54	182	54	72	123						
	Spring	405	83	108	400	666	177	136	151	...	S. 9 12 E.	.24	S. 48½ W.	.05	
	Summer	96	125	182	892	880	71	34	62	...	S. 30 7 E.	.66	S. 34½ E.	.45	
	Autumn	328	210	155	522	662	129	110	294	...	S. 31 2 E.	.16½	N. 5 E.	.07	
	Winter	554	129	43	201	434	220	179	383	...	N. 49 20 W.	.20	N. 34 W.	.41	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 21 40 E.	.22	....	...	3045

[1] Observed at Franklin, Fort Bliss, Camps Concordia and Quitman, and also at El Paso in Mexico.
[2] Computed from the resultants for the seasons.

(Nos. 51 to 56(*a*).) **Texas.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
51. Fort Terrett.	Spring	4	64	91	291	7	25	86	33	...	S. 53° 54′ E.	.44	N. 54° W.	.05	153
	Summer	0	17	141	557	4	8	9	5	...	S. 53 44 E.	.88½	S. 55 E.	.40	184
	Autumn	11	44	96	423	2	25	76	42	...	S. 50 43 E.	.54	S. 26 E.	.07	182
	Winter	7	66	74	129	1	20	133	48	...	S. 58 41 E.	.07½	N. 51 W.	.41	121
	The year[1]	...	...	...	...	...	...	...	...	...	S. 52 30 E.	.48	....	...	640
52. Fort McKavett.	Spring	133	232	84	426	484	239	82	168	...	S. 18 26 E.	.30½	N. 82 W.	.17	
	Summer	43	227	172	982	646	143	27	30	...	S. 35 48 E.	.66	S. 44 E.	.32	
	Autumn	120	343	134	548	404	184	83	134	...	S. 44 30 E.	.33	N. 42½ E.	.09	
	Winter	236	262	48	215	469	310	106	228	...	S. 21 26 W.	.15	N. 53½ W.	.27	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 28 52 E.	.34	....	...	2253
53. Phantom Hill.	January	79	11	21	7	114	44	63	10	...	....	...	....	...	93
	February	63	22	43	3	114	36	34	3	...	....	...	....	...	85
	March	62	27	22	17	172	35	25	7	...	....	...	....	...	93
	April	59	14	14	10	95	18	19	2	...	....	...	....	...	60
	May	32	7	33	10	135	7	17	4	...	....	...	....	...	62
	June	9	8	47	5	154	6	12	0	...	....	...	....	...	60
	July	10	5	32	12	131	33	14	5	...	....	...	....	...	62
	August	8	2	46	35	129	13	3	6	...	....	...	....	...	62
	September	26	28	11	41	123	11	12	7	...	....	...	....	...	60
	October	18	21	26	16	82	28	43	5	...	....	...	....	...	62
	November	47	18	14	22	71	24	25	16	...	....	...	....	...	60
	December	54	10	22	22	115	47	58	30	...	....	...	....	...	93
	Spring	397	117	185	94	1034	145	158	32	...	S. 4 10 E.	.32	N. 21 E.	.04	215
	Summer	81	45	375	156	1242	171	87	33	...	S. 12 5 E.	.62	S. 26 E.	.28	184
	Autumn	273	201	153	237	828	189	240	84	...	S. 2 36 E.	.30	N. 5 E.	.05	182
	Winter	392	86	172	64	686	254	310	86	...	S. 34 26 W.	.24	N. 43 W.	.21½	271
	The year[1]	...	...	...	...	...	...	...	...	...	S. 1 22 E.	.35	....	...	852
54. Camp Colorado.	Spring	33	99	128	125	78	45	107	58	...	S. 63 2 E.	.18	N. 6½ E.	.03½	
	Summer	14	98	177	165	56	31	26	15	...	S. 71 42 E.	.55	S. 81 E.	.36½	
	Autumn	29	76	112	184	36	27	73	88	...	S 74 8 E.	.23½	N. 51 E.	.09	
	Winter	52	33	37	90	116	84	196	85	...	S. 61 36 W.	.31½	S. 85 W.	.43½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 53 32 E.	.20	....	...	1157
55. Fort Mason.	January	79	14	15	35	96	54	57	82	...					
	February	36	13	24	44	119	47	43	37	...					
	March	57	27	17	36	133	58	10	43	...					
	April	53	16	21	29	132	92	12	51	...					
	May	29	32	40	41	169	61	15	7	...					
	June	11	22	19	73	161	65	5	13	...					
	July	4	13	26	79	178	65	4	13	...					
	August	1	10	11	87	144	36	10	11	...					
	September	18	34	36	80	177	33	10	9	...					
	October	52	10	25	29	105	44	15	30	...					
	November	64	17	10	33	67	48	34	27	...					
	December	62	20	16	20	84	92	47	69	...					
	Spring	139	75	78	106	434	211	37	101	...	S. 7 27 W.	.33½	N. 35 E.	.04	
	Summer	16	45	56	239	483	166	19	37	...	S. 1 41 W.	.65½	S. 7½ E.	.30	
	Autumn	134	61	71	142	349	125	59	66	...	S. 3 44 E.	.31½	N. 61 E.	.10	
	Winter	177	47	55	99	299	193	147	188	...	S. 57 51 W.	.25	N. 33 W.	.25	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 11 27 W.	.36½	....	...	2072
56. Ft. Martin Scott and Camp Verde.	Spring	159	155	61	556	446	170	57	231	...	S. 22 57 E.	.31	S. 84½ W.	.08	
	Summer	17	74	90	881	508	134	18	33	...	S. 29 3 E.	.74	S. 24 E.	.40	
	Autumn	211	221	78	633	241	135	32	192	...	S. 56 7 E.	.29	N. 19 E.	.12½	
	Winter	234	238	66	455	237	180	54	333	...	S. 70 54 E.	.08	N. 26 W.	.28	
	The year	621	688	295	2525	1432	619	161	789	...	S. 38 19 E.	.35½	....	...	2407
56(*a*.) Camp Cooper.	Spring	18	23	12	52	43	20	26	11	...	S. 18 16 E.	.26½	S. 17½ W.	.16	
	Summer	7	32	35	90	40	23	5	9	...	S. 48 8 E.	.52	S. 46½ E.	.35	
	Autumn	62	27	18	35	21	26	6	17	...	N. 41 16 E.	.18	N. 3 W.	.24	
	Winter	9	3	6	5	2	7	8	2	...	N. 52 54 W.	.08	N. 51½ W.	.24½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 51 47 E.	.17	....	...	456

[1] Computed from the resultants for the seasons.

(Nos. 57 to 61.) **Texas.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
57. Fort Belknap.	January	277	28	12	76	108	65	56	62	...					
	February	152	33	12	67	92	66	9	44	...					
	March	123	31	37	98	114	33	30	39	...					
	April	93	13	12	88	155	51	34	37	...					
	May	74	34	23	118	138	41	34	20	...					
	June	50	30	26	130	142	43	20	8	...					
	July	11	28	30	227	295	83	16	9	...					
	August	54	34	51	216	289	45	25	8	.					
	September	88	65	77	230	194	71	16	21	...					
	October	143	60	29	185	188	87	33	66	...					
	November	286	28	18	88	178	49	58	77	...					
	December	212	38	14	102	211	80	58	82	...					
	Spring	290	78	72	304	407	125	98	96	...	S. 16° 28′ E.	.21	N. 80° W.	.01	
	Summer	115	92	107	573	726	171	61	25	...	S. 19 42 E.	.60	S. 20½ E.	.37½	
	Autumn	517	153	124	503	560	207	107	164	...	S. 34 15 E.	.16½	N. 14 E.	.08	
	Winter	641	99	38	245	411	211	123	188	...	N. 48 16 W.	.08½	N. 26½ W.	.30	
	The year	1563	422	341	1625	2104	714	389	473	...	S. 19 44 E.	.21½	....	...	2436
58. Fort Croghan.	Spring	98	154	65	346	278	234	78	133	...	S. 11 49 E.	.28½	N. 77 E.	.05	368
	Summer	13	78	80	453	362	283	27	21	...	S. 14 57 E.	.71	S. 23 E.	.42½	368
	Autumn	85	171	71	269	157	269	66	93	...	S. 12 46 E.	.23	N. 31½ E.	.08	334
	Winter	184	68	44	149	144	253	109	303	...	N. 86 36 W.	.24½	N. 40 W.	.40	333
	The year[2]	...	...	...	...	...	...	...	...	...	S. 1 25 E.	.29½	....	...	1403
59. Buffalo Springs & Fort Richardson.	Spring	33	49	24	80	128	134	41	95	...	S. 31 15 W.	.29	S. 41 W.	.11½	184
	Summer	44	59	70	131	104	86	66	69	...	S. 13 10 E.	.20	S. 74½ E.	.12	184
	Autumn	66	88	17	56	135	118	38	91	...	S. 45 39 W.	.15	N. 29 W.	.07	212
	Winter	148	52	53	96	234	110	46	148	...	S. 38 6 W.	.13	N. 6 W.	.06	301
	The year[2]	...	...	...	...	...	...	...	...	...	S. 24 10 W.	.18			
60. Austin Barracks.	January	48	46	16	28	18	27	31	36						
	February	17	10	18	38	8	14	16	26						
	March	28	19	2	36	27	7	0	6						
	April	20	16	7	24	4	9	12	26						
	May	7	14	7	64	12	6	15	36						
	June	3	12	7	44	21	24	3	17						
	July	6	6	3	12	0	21	15	30						
	August	9	21	11	70	26	28	20	9						
	September	8	23	26	61	34	32	31	33						
	October	25	49	7	49	11	35	27	53						
	November	25	26	6	48	17	32	30	62						
	December	47	43	21	31	13	22	50	53						
	Spring	55	49	16	124	43	22	27	68	...	S. 79 53 E.	.12			
	Summer	18	39	21	126	47	73	38	58	...	S. 3 59 E.	.24			
	Autumn	58	98	39	158	62	99	88	148	...	S. 74 34 W.	.06			
	Winter	112	99	55	97	39	63	97	115	...	N. 14 45 W.	.17			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 17 4 E.	.02	....	...	1035
61. Surface winds at Austin in 1854, 1855, 1856 and 1857.[1] No. of observations.	Spring	220	83	14	265	305	67	24	100	...	S. 31 47 E.	.203	S. 37 E.	.10	
	Summer	97	117	58	324	336	87	12	54	...	S. 32 17 E.	.438	S. 34 E.	.34	
	Autumn	253	100	54	143	181	103	99	115	...	N. 28 37 W.	.053	N. 27½ W.	.16	
	Winter	358	44	34	121	208	117	83	173	...	N. 45 28 W.	.164	N. 39 W.	.27	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 27 30 E.	.107	....	...	1461
No. of miles.	Spring	1992	447	96	2098	2610	414	110	676	...	S. 32 23 E.	.218	S. 43 E.	.11	
	Summer	582	589	388	2529	3007	622	48	282	...	S. 25 16 E.	.546	S. 26 E.	.44	
	Autumn	1855	491	185	865	1528	612	432	1014	...	N. 51 37 W.	.077	N. 34 W.	.17	
	Winter	3771	304	134	1015	1729	806	449	1867	...	N. 29 4 W.	.252	N. 27 W.	.36	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 22 11 E.	.110			
M'n vel. in miles p. h'r.	Spring	9.05	5.39	6.86	7.92	8.58	6.18	4.58	6.76						
	Summer	6.00	5.03	6.69	7.81	8.95	7.15	4.00	5.22						
	Autumn	7.33	4.91	3.43	6.05	8.44	5.94	4.36	8.82						
	Winter	10.53	6.91	3.94	8.39	8.31	6.89	5.41	10.79						

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.83	7.42	6.66	8.85	7.69
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.59	3.25	.35	1.45	.82
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.71	4.05	.51	2.23	.85
Excess of the latter over the former	+.12	+.80	+.16	+.78	+.03

[2] Computed from the resultants for the seasons.

(Nos. 62 to 66.)

Texas.—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
62. Central Texas, lat. 30° to 31°, long. 97° to 98°.[1] Surface wind.	Spring	1410	421	183	1128	2554	837	272	579	94	S. 2° 57′ E.	.24½			
	Summer	644	518	303	1398	3373	785	158	184	104	S. 12 10 E.	.52			
	Autumn	1910	523	329	872	1940	913	541	732	136	S. 43 51 W.	.07			
	Winter	2185	474	281	640	1655	1050	644	969	114	N. 70 30 W.	.13			
	The year[2]	...	...	...	...	...	...	...	...		S. 3 56 W.	.19			
Motion of clouds.	Spring	187	76	28	273	835	402	173	264	...	S. 67 39 W.	.43			
	Summer	211	182	100	284	812	238	68	116	...	S. 8 20 E.	.38			
	Autumn	245	128	48	215	463	246	84	111	...	S. 3 57 W.	.24½			
	Winter	244	44	27	120	502	443	199	198	...	S. 46 24 W.	.29½			
	The year[2]	...	...	...	...	...	...	...	...	...	S. 36 58 W.	.33			
2 preceding combined.	Spring	1597	497	211	1401	3389	1239	445	843	94	S. 7 39 W.	.28	S. 2° W.	.06	
	Summer	855	700	403	1682	4185	1023	226	300	104	S. 11 32 E.	.49	S. 26½ E.	.30	
	Autumn	2155	651	377	1087	2403	1159	625	843	136	S. 29 8 W.	.09½	N. 5 W.	.13	
	Winter	2429	518	308	760	2157	1493	843	1167	114	S. 85 6 W.	.15½	N. 30½ W.	.23½	
	The year[2]	7036	2366	1299	4930	12134	4914	2139	3153	448	S. 9 38 W.	.21			
63. Fort Gates.	Spring	113	41	16	50	302	53	51	60	...	S. 14 53 W.	.29	....	...	184
	Summer	9	3	17	119	346	105	31	13	...	S. 1 20 W.	.75	....	...	184
	Autumn	104	52	63	132	244	48	60	94	...	S. 13 14 E.	.25	....	...	243
	Winter	165	43	25	49	207	63	85	120	...	S. 80 49 W.	.18	....	...	211
	The year[2]	...	...	...	...	...	...	...	...	...	S. 9 38 W.	.33	....	...	822
64. Fort Graham.	January	50	57	11	43	29	89	22	64	...	....	...	....	...	93
	February	25	52	27	37	30	96	23	46	...	....	...	....	...	85
	March	69	47	47	65	66	112	32	31	...	....	...	....	...	124
	April	27	58	19	72	76	120	17	50	...	....	...	....	...	120
	May	30	34	40	98	176	89	7	12	...	....	...	....	...	124
	June	8	23	31	71	199	124	3	5	...	....	...	....	...	120
	July	5	16	28	116	159	52	12	6	...	....	...	....	...	124
	August	8	30	32	104	120	76	8	9	...	....	...	....	...	124
	September	12	28	30	115	72	56	21	9	...	....	...	....	...	90
	October	14	38	29	117	34	83	17	20	...	....	...	....	...	93
	November	43	24	20	33	42	116	33	44	...	....	...	....	...	90
	December	63	29	8	62	39	57	25	87	...	....	...	....	...	93
	Spring	126	139	106	235	318	321	56	93	...	S. 2 57 E.	.30	....	...	368
	Summer	21	69	91	291	478	252	23	20	...	S. 10 14 E.	.60	....	...	368
	Autumn	69	90	79	265	148	255	71	73	...	S. 1 55 W.	.32	....	...	273
	Winter	138	138	46	142	98	242	70	197	...	S. 87 45 W.	.13	....	...	271
	The year[2]	...	...	...	...	...	...	...	...	...	S. 0 34 W.	.30½	....	...	1280
65. Forts Gates and Graham combined.	Spring	239	180	122	285	620	374	107	153	...	S. 2 42 W.	.34½	S. 3 W.	.02	
	Summer	30	72	108	410	824	357	54	33	...	S. 5 27 E.	.67	S. 13 E.	.36	
	Autumn	173	142	142	397	392	303	131	167	...	S. 6 53 E.	.27	N. 40 E.	.07	
	Winter	303	181	71	191	305	305	155	317	...	S. 89 52 W.	.14½	N. 22½ W.	.33½	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 2 46 W.	.32			
66. Fort Worth.	January	121	42	41	93	51	41	27	50	...	....	...	....	...	124
	February	107	36	41	44	57	35	36	36	...	....	...	....	...	113
	March	100	42	50	76	78	25	20	32	...	....	...	....	...	124
	April	96	28	58	65	102	21	32	12	...	....	...	....	...	120
	May	49	36	49	125	93	27	16	16	...	....	...	....	...	124
	June	25	29	45	127	135	28	17	6	...	....	...	....	...	120
	July	33	52	51	97	136	24	4	9	...	....	...	....	...	124
	August	29	37	28	110	143	31	17	26	...	....	...	....	...	124
	September	40	64	27	45	72	15	4	25	...	....	...	....	...	90
	October	25	51	13	59	80	17	14	42	...	....	...	....	...	93
	November	57	43	29	67	76	46	40	40	...	....	...	....	...	120
	December	90	34	15	32	68	43	20	70	...	....	...	....	...	124
	Spring	245	106	157	266	273	73	68	60	...	S. 59 46 E.	.24	....	...	368
	Summer	87	118	124	334	414	83	38	41	...	S. 32 35 E.	.49	....	...	368
	Autumn	144	196	82	206	279	89	64	129	...	S. 52 46 E.	.16	....	...	303
	Winter	318	112	97	169	176	119	83	156	...	N. 8 7 E.	.10½	....	...	361
	The year[2]	...	...	...	...	...	...	...	...	...	S. 49 21 E.	.20	....	...	1400

[1] Observed at Austin, Bastrop, Cross Roads, Mine Creek and Webberville.
[2] Computed from the resultants for the seasons.

(Nos. 67 to 70.) **Texas.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
67. Northern Texas east of longitude 98°.[1]	Surface wind.	Spring	139	56	56	70	388	125	115	91	111	S. 23° 26′ W.	.27	N. 88° W.	.11½
		Summer	56	28	194	158	549	106	68	15	64	S. 14 15 E.	.54½	S. 26 E.	.30½
		Autumn	230	81	165	140	456	115	102	48	144	S. 17 48 E.	.23	N. 59 E.	.07½
		Winter	351	47	100	73	348	134	122	107	72	S. 72 13 W.	.08	N 19 W.	.24½
		The year[4]	...	...	...	...	...	...	...	...	...	S. 1 11 E.	.25½		
	Motion of clouds.	Spring	3	6	2	2	23	59	28	9	...	S. 52 30 W.	.65		
		Summer	6	0	0	11	33	20	4	7	...	S. 19 15 W.	.57½		
		Autumn	0	0	2	3	6	11	4	3	...	S. 35 22 W.	.58		
		Winter	18	0	4	2	28	17	7	6	...	S. 42 56 W.	.32		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 37 35 W.	.52		
	The two combined.	Spring	142	62	58	72	411	184	143	100	111	S. 29 40 W.	.30	N. 89½ W.	.13½
		Summer	62	28	194	169	582	126	72	22	64	S. 12 44 E.	.54	S. 26½ E.	.30
		Autumn	230	81	167	143	471	126	106	51	144	S. 15 35 E.	.23	N. 63 E.	.08½
		Winter	369	47	104	75	376	151	129	113	72	S. 66 50 W.	.09½	N. 18½ W.	.24
		The year[4]	...	...	...	...	...	...	...	...	...	S. 3 4 W.	.26½		
68. Latitude 32° to 33°; longitude 94° to 97°.[2]	Surface wind.	Spring	181	32	24	94	599	59	28	102	400	S. 3 49 W.	.28½		
		Summer	82	82	72	276	685	83	44	46	441	S. 13 55 E.	.43½		
		Autumn	227	49	11	128	328	82	29	74	499	S. 1 7 W.	.11½		
		Winter	290	30	7	128	367	71	63	158	417	S. 51 23 W.	.09		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 0 47 E.	.22		
	Motion of clouds.	Spring	33	15	6	18	116	270	153	125	...	S. 65 2 W.	.60½		
		Summer	35	34	11	45	153	145	87	62	...	S. 83 41 W.	.34½		
		Autumn	48	33	9	30	82	166	122	79	...	S. 68 52 W.	.45½		
		Winter	42	18	3	40	75	176	101	93	...	S. 66 33 W.	.49		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 60 49 W.	.49		
	2 preceding combined.	Spring	214	47	30	112	715	329	181	227	400	S. 30 15 W.	.32	S. 44 W.	.07½
		Summer	117	116	83	321	838	228	131	108	441	S. 1 25 E.	.40	S. 35 E.	.21
		Autumn	275	82	20	158	410	248	151	153	499	S. 43 44 W.	.18	N. 8½ W.	.10
		Winter	332	48	10	168	442	247	164	251	417	S. 61 29 W.	.19½	N. 22 W.	.14½
		The year[4]	...	...	...	...	...	...	...	...	...	S. 26 22 W.	.25		
69. Latitude 31° to 32°; longitude 94° to 97°.[3]	Surface wind.	Spring	269	54	122	211	421	54	69	87	15	S. 30 25 E.	.21½		
		Summer	100	82	274	246	519	79	62	46	15	S. 32 30 E.	.46½		
		Autumn	299	80	153	170	341	81	66	74	119	S. 54 21 E.	.14		
		Winter	375	53	80	133	139	79	103	155	85	N. 13 44 W.	.20		
		The year	...	...	...	...	...	...	...	...	...	S. 42 25 E.	.16		
	Motion of clouds.	Spring	84	22	28	32	201	31	59	27	...	S. 14 56 W.	.27		
		Summer	45	18	45	42	337	36	39	12	...	S. 2 33 E.	.57		
		Autumn	47	4	19	30	179	58	43	20	...	S. 17 16 W.	.46½		
		Winter	64	5	10	12	62	53	46	21	...	S. 71 28 W.	.29½		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 18 40 W.	.36		
	2 preceding combined.	Spring	353	76	150	243	622	85	128	114	15	S. 16 15 E.	.21	S. 12 E.	.04
		Summer	145	100	319	288	856	115	101	58	15	S. 22 39 E.	.48	S. 25½ E.	.30½
		Autumn	346	84	172	200	520	139	109	94	119	S. 19 0 E.	.17	N. 49 E.	.01
		Winter	439	58	90	145	201	132	149	176	85	N. 32 42 W.	.17	N. 25 W.	.34
		The year[4]	...	...	...	...	...	...	...	...	...	S. 17 32 E.	.17½		
70. Burkeville.	Surface winds.	Spring	69	23	160	9	42	94	187	58	146	N. 84 10 W.	.14	S. 77½ W.	.20
		Summer	23	25	233	15	47	48	108	40	105	S. 76 4 E.	.14½	S. 44 E.	.12½
		Autumn	55	26	238	8	22	21	108	40	116	N. 61 55 E.	.20	N. 72 E.	.13
		Winter	137	69	184	16	27	64	123	45	222	N. 18 11 E.	.16	N. 5 W.	.09½
		The year[4]	...	...	...	...	...	...	...	...	...	N. 45 0 E.	.08		
	Motion of clouds.	Spring	0	1	1	1	19	26	29	2	...	S. 52 12 W.	.74		
		Summer	0	1	1	2	0	5	11	0	...	S. 69 37 W.	.61		
		Autumn	0	4	3	0	0	2	0	2	...	N. 64 49 E.	.30		
		Winter	1	5	2	3	6	31	18	20	...	S. 76 15 W.	.55½		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 64 46 W.	.39		

[1] Observed at Bonham, Boston, Greenville, Preston, Tarrant and Woodboro'.
[2] Observed at Dallas, Gilmer, Jefferson, Kaufman and Turner's Point.
[3] Observed at Bremend, Larissa, Palestine, Springfield and Waco.
[4] Computed from the resultants for the seasons.

(Nos. 71 and 72.) **Texas.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
71. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57. Lat. 30° to 31°; long. 95° to 97°.[1]	No. of observations.	Spring	221	5	10	33	196	11	7	8	...	N. 79° 23′ E.	.032		
		Summer	228	22	11	77	104	22	23	6	...	N. 27 22 W.	.164		
		Autumn	146	38	48	32	95	2	5	13	...	N. 52 25 E.	.232		
		Winter	250	14	18	22	249	18	8	8	...	S. 55 30 E.	.032		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 42 38 E.	.094		
	No. of miles.	Spring	1744	32	318	259	2927	97	157	38	...	S. 11 5 E.	.239		
		Summer	1032	143	46	977	882	86	183	18	...	S. 50 0 E.	.219		
		Autumn	552	262	235	204	474	8	12	70	...	N. 71 52 E.	.297		
		Winter	2240	135	64	68	1480	89	133	110	...	N. 5 1 W.	.190		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 79 [illegible] E.	.121		
	M'n vel. in miles p. h'r.	Spring	7.89	6.40	31.80	7.85	14.93	8.82	22.43	4.75					
		Summer	4.53	6.50	4.18	12.69	8.48	3.91	7.96	3.00					
		Autumn	3.78	6.89	4.90	6.37	4.99	4.00	2.40	5.38					
		Winter	8.96	9.64	3.56	3.09	5.94	4.94	16.62	13.75					
72. Aggregate number of observations at all stations. Lat. 30° to 31°; long. 95° to 97°.[2]	Surface wind.	Spring	732	44	144	189	1319	43	129	69	143	S. 8 31 E.	.24		
		Summer	472	110	238	340	1586	120	100	15	179	S. 14 57 E.	.44		
		Autumn	806	90	168	121	940	48	61	70	232	S. 51 4 E.	.09		
		Winter	1102	77	176	133	1108	54	136	104	261	S. 82 24 E.	.03		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 18 29 E.	.19		
	Motion of clouds.	Spring	217	55	52	98	552	63	170	24	...	S. 10 17 W.	.32½	S. 40° W.	.07
		Summer	138	91	166	99	776	70	73	23	...	S. 13 26 E.	.48½	S. 31 E.	.24
		Autumn	253	22	56	59	398	14	78	16	...	S. 4 40 E.	.19	N. 17 E.	.07
		Winter	404	49	73	73	505	73	129	36	...	S. 72 0 W.	.11	N. 21 W.	.26
		The year[3]	...	...	...	...	...	...	...	...	...	S. 3 28 W.	.27		
	2 preceding combined.	Spring	949	99	196	287	1871	106	299	93	143	S. 1 28 E.	.26½	S. 33½ W.	.07
		Summer	610	201	404	439	2362	190	173	38	179	S. 14 27 E.	.46	S. 16 E.	.24½
		Autumn	1059	112	224	180	1338	62	139	86	232	S. 31 4 E.	.10½	N. 5 E.	.12
		Winter	1506	126	249	206	1613	127	265	140	261	S. 10 59 E.	.03½	N. 13 W.	.18
		The year[3]	...	...	...	...	...	...	...	...	...	S. 12 22 E.	.21		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	11.35	6.83	4.79	7.36	7.58
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	36	1.11	1.11	.24	.71
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.72	1.50	1.42	1.40	.92
Excess of the latter over the former	+2.36	+.39	+.31	+1.16	+.21

[2] Observed at Chappell Hill, Huntsville, Long Point, Round Top, Union Hill, Washington and Wheelock.
[3] Computed from the resultants for the seasons.

(Nos. 73 to 77.) **Indian Territory,** south of latitude 35°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Armstrong Academy,	Prof. A. G. Moffatt,	0	10	1849.
Doaksville,	....	0	4	1860.
Fort Arbuckle,	Post Surgeon,	11	5	1850 to 1861 and 1867 to 1869, both inclusive.
Fort Towson,	Post Surgeon,	17	6	1833 to 1846 and 1849 to 1854, both inclusive.
Fort Washita,	Post Surgeon,	15	10	1843 to 1861 inclusive.

(Nos. 73 to 77.) **Indian Territory.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
73. Fort Arbuckle.	January	272	76	80	122	210	146	136	135						
	February	184	55	60	128	222	129	90	106						
	March	185	106	83	122	284	146	108	99						
	April	136	81	78	166	279	114	93	92						
	May	83	62	114	143	277	115	57	38						
	June	35	59	95	199	345	98	121	59						
	July	37	78	102	236	357	137	59	25						
	August	85	115	158	257	299	144	40	40						
	September	100	104	121	207	336	116	55	62						
	October	159	118	78	176	282	110	117	123						
	November	190	94	64	141	226	139	124	150						
	December	269	104	82	124	200	160	140	211						
	Spring	404	249	275	431	840	375	258	229	...	S. 6° 3′ E.	.22	S. 6° E.	.02	
	Summer	157	252	355	692	1001	379	220	124	...	S. 18 30 E.	.44	S. 29 E.	.25	
	Autumn	449	316	263	524	844	365	296	335	...	S. 6 7 E.	.17	S. 6 E.	.03	
	Winter	725	235	222	374	632	435	366	452	...	N. 88 52 W.	.10	N. 30½ W.	.24	
	The year	1735	1052	1115	2021	3317	1554	1140	1140	...	S. 5 25 E.	.20			
74. Fort Washita.	January	309	163	227	170	276	215	263	166						
	February	261	165	143	205	307	154	231	155						
	March	253	185	220	203	377	167	200	158						
	April	185	160	192	188	492	123	168	137						
	May	139	166	224	235	522	184	131	79						
	June	91	91	238	247	519	233	101	32						
	July	104	190	232	199	572	224	66	23						
	August	120	183	196	261	573	230	92	36						
	September	235	187	236	237	452	155	66	56						
	October	212	141	217	219	421	211	173	114						
	November	315	146	162	192	387	188	194	136						
	December	336	143	163	158	314	153	253	249						
	Spring	577	511	636	626	1391	474	499	374	...	S. 19 28 E.	.20	S. 71½ E.	.01	
	Summer	315	464	666	707	1664	687	259	91	...	S. 19 26 E.	.42½	S. 22 E.	.23	
	Autumn	762	474	615	648	1260	554	433	306	...	S. 24 46 E.	.17	N. 25 E.	.03½	
	Winter	906	471	533	533	897	522	747	570	...	S. 89 49 W.	.05½	N. 31 W.	.22	
	The year	2560	1920	2450	2514	5212	2237	1938	1341	...	S. 16 47 E.	.19			
75. Armstrong Academy.	Spring	31	0	25	13	22	9	4	3	1	S. 78 28 E.?	.21	....	...	61
	Summer	6	7	44	30	4	5	4	18	1	S. 84 11 E.?	.42	....	...	62
	Autumn	20	13	42	44	7	17	2	29	5	S. 89 28 E.?	.27	....	...	91
	Winter	71	6	30	34	16	7	4	7	0	N. 51 34 E.?	.32	....	...	90
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 8 E.	.30	....	...	304
76. Fort Towson.[1]	January	18	20	22	36	40	45	24	42	...	S. 34 1 W.	.17			
	February	31	22	10	24	32	50	34	25	...	S. 65 42 W.	.22			
	March	30	17	11	33	58½	41	38	18½	...	S. 31 11 W.	.26			
	April	25	13	26	34	57	50	24	12	...	S. 6 40 W.	.31			
	May	9	9	15	45	83	47	15	23	...	S. 5 33 W.	.47			
	June	16	12	15	30	96	47	13	12	...	S. 4 53 W.	.49			
	July	5	14	11	36	104	44	22	12	...	S. 6 21 W.	.56			
	August	15	17	15	31	78	57	10	24	...	S. 13 38 W.	.40			
	September	31	22	17	37	61	29	14	29	...	S. 5 13 W.	.17			
	October	34	31	5	26	45	58	10	32	...	S. 47 37 W.	.16			
	November	18	18	8	46	22	66	30	33	...	S. 44 46 W.	.28			
	December	14	26	16	48	27	50	40	24	...	S. 27 5 W.	.21			
	Spring	530	308	694	551	556[2]	269	236	260[2]	...	S. 73 33 E.	.21			
	Summer	226	294	494	549	812	288	178	164	...	S. 34 45 E.	.35			
	Autumn	516	556	695	408	411	238	233	349	...	N. 68 25 E.	.23			
	Winter	729	395	676	315	374	284	304	430	...	N. 35 39 E.	.18			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 81 9 E.	.18			
77. South-eastern Indian Territory.[2]	Spring	561	325	728	568	580½	291	252	272½	28	S. 73 56 E.	.20⅓	S. 36½ E.	.03½	
	Summer	234	309	580	514	823	364	194	183	6	S. 33 59 E.	.32½	S. 1½ E.	.24	
	Autumn	540	570	749	468	424	259	244	393	18	N. 70 1 E.	.22½	N. 20 E.	.11	
	Winter	800	401	706	349	390	291	308	437	0	N. 36 57 E.	.18	N. 21 W.	.18	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 81 54 E.	.18			

[1] Separate months for the first eight years only.
[2] Observed at Armstrong, Academy, Doaksville and Fort Towson.
[3] Computed from the resultants for the seasons.

(Nos. 78 to 82.) **Arkansas**, south of latitude 35°.

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Arkadelphia,	Dennis Barlow,	0	11	1858 and 1860.
Brownsville,	B. F. Coulter,	0	6	1860.
Camden,	…………………	0	1	1855.
Helena,	O. F. Russell,	1	9	1865, 1866, 1867 and 1869.
Little Rock,	Goulding,	1	0	1840.
Little Rock Arsenal,	Post Surgeon,	4	1	1840 and 1860 to 1863 inclusive.
Springhill,	P. F. Finley,	1	0	1859 and 1860.
Waldron,	Geo. W. Featherstone,	0	5	1860.
Washington,	Dr. N. D. Smith & A. P. Moore, M.D.,	1	5	1860 and 1861.

Place and kind of observations	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
78. Little Rock.	The year	62	109	92	62	106	108	109	84	…	S. 58° 58′ W.	.04		
79. Little Rock Arsenal.	January	47	54	58	70	25	65	74	131					
	February	14	42	49	43	25	66	53	103					
	March	35	58	36	35	17	43	59	151					
	April	8	33	34	69	28	79	72	97					
	May	28	20	57	93	26	70	50	89					
	June	24	21	14	58	84	96	67	56					
	July	31	18	44	68	59	92	60	59					
	August	28	31	15	41	68	46	51	61					
	September	25	30	19	32	29	66	48	81					
	October	46	35	50	82	33	48	44	96					
	November	48	56	35	48	43	44	18	128					
	December	81	55	60	77	48	79	70	150					
	Spring	71	111	127	197	71	192	181	337	…	N. 78 47 W.	.16½		
	Summer	83	70	73	167	211	234	178	176	…	S. 43 44 W.	.27½		
	Autumn	119	121	104	162	105	158	110	305	…	N. 56 16 W.	.13½		
	Winter	142	151	167	190	98	210	197	384	…	N. 56 18 W.	.16½		
	The year[3]	…	…	…	…	…	…	…	…	…	S. 89 54 W.	.15		
80. Helena.	Spring	44	33	26	23	30	32	46	41	131	N. 49 24 W.	.10		
	Summer	35	12	35	43	40	21	34	15	114	S. 24 51 E.	.10		
	Autumn	144	34	28	25	39	20	17	53	162	S. 0 28 E.	.26		
	Winter	129	40	40	26	71	32	55	46	97	N. 16 48 W.	.15		
	The year[3]	…	…	…	…	…	…	…	…	…	S. 35 4 W.	.03		
81. Latitude 34° to 35°.[1] Surface winds.	Spring	165	195	212	244	167	494	305	480	156	S. 84 22 W.	.20		
	Summer	186	216	230	305	432	488	305	249	121	S. 25 29 W.	.21		
	Autumn	509	501	423	567	699	930	499	740	290	S. 53 31 W.	.12		
	Winter	349	286	246	271	245	457	335	588	108	N. 64 29 W.	.17		
	The year[3]	…	…	…	…	…	…	…	…	…	S. 68 39 W.	.14		
Motion of clouds.	Spring	1	1	5	2	8	28	35	6	…	S. 65 52 W.	.66	S. 14½° W.	.11
	Summer	3	4	11	10	2	40	35	5	…	S. 58 39 W.	.49	S. 56 E.	.18
	Autumn	1	7	1	0	0	31	50	9	…	S. 82 26 W.	.73½	N. 69½ W.	.16
	Winter	7	2	4	4	2	11	33	7	…	N. 88 50 W.	.53½	N. 11 E.	.16
	The year[3]	…	…	…	…	…	…	…	…	…	S. 75 4 W.	.59		
The two combined.	Spring	166	196	217	246	175	522	340	486	156	S. 82 24 W.	.21	N. 66 W.	.07
	Summer	189	220	241	315	434	428	340	254	121	S. 28 27 W.	.22	S. 17 E.	.14½
	Autumn	510	508	424	567	699	961	549	749	290	S. 56 27 W.	.13	S. 66 E.	.04
	Winter	356	288	250	275	247	468	368	595	108	N. 66 12 W.	.17½	N. 6 W.	.13
	The year[3]	…	…	…	…	…	…	…	…	…	S. 69 11 W.	.15½		
82. Latitude 33° to 34°.[2]	Spring	17	28	20	38	45	96	22	29	78	S. 27 56 W.	.25	S. 9½ W.	.13
	Summer	7	19	36	27	19	37	49	8	125	S. 17 51 W.	.12	S. 71 E.	.06½
	Autumn	23	30	26	36	47	37	39	52	165	S. 58 55 W.	.07½	N. 19 E.	.07
	Winter	52	36	29	37	31	85	73	48	105	S. 86 7 W.	.17½	N. 43 W.	.11½
	The year[3]	…	…	…	…	…	…	…	…	…	S. 45 18 W.	.14		

[1] Observed at Arkadelphia, Brownsville, Helena, Little Rock, Little Rock Arsenal and Waldron.
[2] Observed at Camden, Spring Hill and Washington.
[3] Computed from the resultants for the seasons.

(Nos. 83 to 92.) **Louisiana**, north of latitude 30°.

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Anchorage Plain,	…………………	0	1	1869.
Baton Rouge,	Post Surgeon,	22	1	1822, 1831 to 1835, 1839 and 1843 to 1859, all inclusive.
Benton,	J. H. Carter,	1	9	1867, 1868 and 1869.
Black River,	…………………	2	2	1856, 1857 and 1858.
Camp Salubrity,	Post Surgeon,	0	6	1844 and 1845.
Fort Jesup,	Post Surgeon,	22	11	1823 to 1845 inclusive, and 1849.
Fort Pike,	Post Surgeon,	7	7	1831 to 1834 and 1843 to 1846, both inclusive.
Fort Wood,	Post Surgeon,	6	2	1831, 1833, 1835 and 1843 to 1846 inclusive.
Independence,	………………	1	1	1859 and 1860.
Petit Coquille,	Post Surgeon,	7	8	1831 to 1834 and 1843 to 1866, both inclusive.
Shreveport,	…………………	0	5	1869.
Tickfaw,	…………………	1	1	1859 and 1860.
Trinity,	A. R. Kilpatrick, M.D., and E. Merrill, M.D.,	1	4	1856, 1857 and 1860.
Vidalia,	Rev. A. K. Teele,	0	3	1867.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
83. Fort Jesup.	January	241	119	63	100	170	160	86	120					
	February	206	147	61	100	146	135	441	140					
	March	195	133	64	123	202	124	71	127					
	April	108	103	85	137	311	136	73	76					
	May	85	70	115	142	256	166	101	70					
	June	64	74	88	161	302	149	98	55					
	July	82	88	111	149	318	129	117	51					
	August	112	160	95	118	156	119	90	69					
	September	136	241	171	127	160	67	51	63					
	October	160	235	136	109	127	106	50	125					
	November	208	141	116	116	126	99	81	125					
	December	231	127	81	129	147	74	79	176					
	Spring	388	306	264	402	769	426	245	273	…	S. 2° 36′ E.	.18		
	Summer	258	322	294	428	776	397	305	175	…	S. 9 32 E.	.26		
	Autumn	504	617	423	352	413	272	182	313	…	N. 59 3 E.	.19½		
	Winter	678	393	205	329	463	369	209	436	…	N. 11 31 W.	.10		
	The year	1828	1638	1186	1511	2421	1464	941	1197	…	S. 40 28 E.	.07		
84. Western Louisiana.[1]	Spring	427	342	360	494	786	442	262	316	…	S. 15 25 E.	.17	S. 9° W.	.11
	Summer	274	368	368	474	823	446	324	184	…	S. 13 29 E.	.25½	S. 1 W.	.19½
	Autumn	504	617	423	352	413	272	182	313	…	N. 59 2 E.	.19½	N. 33½ E.	.18½
	Winter	678	393	205	329	463	369	209	436	…	N. 11 31 W.	.10	N. 29 W.	.17
	The year[3]	…	…	…	…	…	…	…	…	…	S. 50 12 E.	.08		
85. Northwestern Louisiana.[2] Surface wind.	Spring	71	19	63	129	238	53	54	37	28	S. 11 3 E.	.38		
	Summer	27	5	24	49	139	22	18	3	75	S. 9 37 E.	.44		
	Autumn	104	20	87	90	112	27	23	15	44	S. 59 30 E.	.25		
	Winter	72	21	47	78	55	36	21	23	32	S. 59 5 E.	.16½		
	The year[3]	…	…	…	…	…	…	…	…	…	S. 26 36 E.	.28		
Motion of clouds.	Spring	19	4	14	39	104	63	32	17	…	S. 17 15 W.	.51	S. 44½ E.	.28
	Summer	0	0	0	1	4	8	0	2	…	S. 35 24 W.	.73	S. 14 W.	.32
	Autumn	13	0	4	4	2	23	9	13	…	N. 87 43 W.	.40½	N. 11 W.	.30
	Winter	9	8	1	5	3	30	13	11	…	S. 80 31 W.	.40	N. 11 W.	.22
	The year[3]	…	…	…	…	…	…	…	…	…	S. 50 34 W.	.45		
The two combined.	Spring	90	23	77	168	342	116	86	54	28	S. 0 50 E.	.40½	S. 9 W.	.14
	Summer	27	5	24	50	143	30	18	5	75	S. 6 56 E.	.44	S. 9 E.	.17
	Autumn	117	20	91	94	114	50	32	28	44	S. 0 45 E.	.14½	N. 11½ W.	.13
	Winter	81	29	48	83	58	66	34	34	32	S. 30 45 E.	.09½	N. 7 E.	.05
	The year[3]	…	…	…	…	…	…	…	…	…	S. 13 43 E.	.26½		

[1] Fort Jesup and Camp Salubrity.
[2] Anchorage Plain, Benton and Shreveport.
[3] Computed from the resultants for the seasons.

(Nos. 86 to 89.) **Louisiana.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
86. Surface winds at Black River & Trinity in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	136	31	37	58	202	26	19	40	...	S. 24° 30′ E.	.150	S. 45° W.	.11
		Summer	93	32	42	57	179	18	13	21	...	S. 32 22 E.	.264	S. 1 E.	.16
		Autumn	201	61	73	63	154	19	5	23	...	N. 68 59 E.	.221	N. 27 E.	.15
		Winter	171	44	66	61	136	24	13	34	...	N. 70 47 E.	.166	N. 9 E.	.11
		The year[4]	...	...	...	...	...	...	...	...	...	S. 68 20 E.	.152		
	No. of miles	Spring	1622	191	90	308	1191	215	54	282	..	N. 5 24 E.	.100	N. 27 W.	.10
		Summer	485	120	122	197	630	110	145	129	...	S. 9 48 E.	.096	S. 20 W.	.11
		Autumn	885	243	232	239	968	97	22	257	...	N. 83 44 E.	.100	S. 89 E.	.04
		Winter	1139	206	262	341	1058	82	116	225	...	N. 74 39 E.	.097	N. 69 E.	.04
		The year[4]	...	...	...	...	...	...	...	...	...	N. 79 37 E.	.058		
	M'n vel. in miles p.h'r.	Spring	11.93	6.16	2.43	5.31	5.90	8.27	2.84	7.05					
		Summer	5.22	3.75	2.90	3.46	3.52	6.11	11.15	6.14					
		Autumn	4.40	3.98	3.18	3.79	6.29	5.11	4.40	11.17					
		Winter	6.66	4.68	3.97	5.59	7.78	3.42	8.92	6.62					
87. Northeastern Louisiana.[2]	Surface wind.	Spring	245	89	78	183	359	95	41	75	5	S. 29 17 E.	.19		
		Summer	173	110	61	99	325	166	24	41	2	S. 9 23 E.	.23½		
		Autumn	316	126	90	99	229	64	19	46	12	N. 58 30 E.	.18		
		Winter	299	79	73	105	232	36	18	59	5	N. 61 10 E.	.15		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 60 31 E.	.12		
	Motion of clouds.	Spring	42	12	7	35	113	145	69	61	...	S. 49 56 W.	.47	S. 45 W.	.16
		Summer	48	56	28	44	110	116	29	57	...	S. 28 56 W.	.22	S. 89½ E.	.15
		Autumn	48	32	14	29	55	93	34	53	...	S. 67 31 W.	.24	N. 16 E.	.10
		Winter	37	27	18	7	48	103	49	24	...	S. 61 25 W.	.35	N. 69 W.	.06
		The year[4]	...	...	...	...	...	...	...	...	...	S. 52 52 W.	.31½		
	2 preceding combined.	Spring	287	101	85	218	472	240	110	136	5	S. 10 50 W.	.21	S. 25 W.	.12
		Summer	221	166	89	143	435	382	53	98	2	S. 12 2 W.	.25½	S. 23 W.	.17
		Autumn	364	158	104	128	284	57	53	99	12	N. 66 21 E.	.14	N. 36½ E.	.19
		Winter	336	106	91	112	280	139	67	83	5	N. 60 7 E.	.02	N. 1½ E.	.10½
		The year[4]	...	...	...	...	...	...	...	...	...	S. 7 16 E.	.10		
88. Baton Rouge.		January	302	210	485	238	214	157	168	153					
		February	239	143	382	160	200	170	221	136					
		March	283	181	351	258	255	170	153	151					
		April	203	176	313	294	316	207	139	103					
		May	136	185	387	268	289	175	177	64					
		June	159	196	464	255	316	180	179	86					
		July	155	171	474	265	347	323	291	115					
		August	153	203	578	276	195	210	235	171					
		September	195	317	516	194	66	95	130	153					
		October	301	378	578	189	87	103	198	127					
		November	255	270	440	154	116	85	151	140					
		December	373	357	571	145	145	70	150	117					
		Spring	622	542	1051	820	860	552	469	318	...	S. 57 9 E.	.21		
		Summer	467	570	1516	796	858	713	705	372	...	S. 51 51 E.	.21½		
		Autumn	751	965	1534	537	269	283	479	420	...	N. 61 27 E.	.35		
		Winter	914	710	1438	543	559	397	539	406	...	N. 68 30 E.	.24		
		The year[4]	...	...	...	...	...	...	...	...	...	N. 89 25 E.	.22		
89. Eastern Louisiana, lat. 30°–31°, long. 90°–92°.[3]		Spring	644	546	1059	896	879	649	500	337	0	S. 51 26 E.	.16	S. 32 W.	.11
		Summer	535	606	1555	878	1024	817	730	387	16	S. 46 29 E.	.20½	S. 16 W.	.13½
		Autumn	867	1002	1570	606	469	328	539	471	7	S. 64 5 E.	.30½	N. 32 E.	.17
		Winter	1008	726	1444	627	630	491	557	456	3	N. 70 9 E.	.21	N. 3 E.	.08
		The year[4]	...	...	...	...	...	...	...	...	...	S. 84 47 E.	.20		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.20	4.26	4.91	6.25	5.65
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.08	1.12	1.09	.60	.86
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	.72	.41	.49	1.04	.33
Excess of the latter over the former	—.36	—.71	—.60	+.44	—.53

[2] Observed at Black River, Trinity and Fidalia.

[3] Observed at Baton Rouge, Camp Lawrence, Poydras College and Tickfaw. Motion of clouds at Tickfaw for February, 1860, and February, 1869, combined with surface wind.

[4] Computed from the resultants for the seasons.

(Nos. 90 to 92.) **Louisiana.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
90. Petite Coquille.[1]	January	52	151	170	95	52	78	73	159					
	February	81	139	132	99	45	80	72	122					
	March	71	134	166	109	68	111	66	118					
	April	36	67	143	183	90	135	82	80					
	May	41	77	93	143	59	160	75	77					
	June	20	66	81	154	60	172	84	72					
	July	27	76	65	92	63	188	110	112					
	August	29	94	82	69	17	75	65	67					
	September	25	124	103	95	24	39	22	42					
	October	46	126	106	63	12	41	44	56					
	November	43	86	106	79	12	32	33	87					
	December	85	132	89	77	23	44	57	117					
	Spring	148	278	402	435	217	406	223	275	...	S. 36° 29′ E.	.14		
	Summer	76	236	228	315	140	435	259	251	...	S. 26 50 W.	.14½		
	Autumn	114	336	315	237	48	112	99	185	...	N. 65 33 E.	.31		
	Winter	218	422	391	271	120	202	202	398	...	N. 36 34 E.	.19		
	The year	556	1272	1336	1258	525	1155	783	1109	...	N. 89 21 E.	.09½		
91. Fort Wood.[2]	January	9	7	11	16	9	4	15	19	...	N. 43 20 W.	.06½		
	February	4	9	9	18	12	2	13	17	...	S. 23 49 E.	.05		
	March	1	3	8	29	8	14	13	17	...	S. 13 48 W.	.26		
	April	1	13	7	22	5	12	7	23	...	South.	.03		
	May	3	18	4	17	10	16	14	11	...	S. 23 49 W.	.11½		
	June	3	5	6	30	18	17	6	13	...	S. 7 5 E.	.31½		
	July	1	17	8	31	9	.12	5	10	...	S. 47 55 E.	.31		
	August	0	22	10	6	5	22	8	20	...	N. 58 11 W.	.10		
	September	5	27	11	24	3	3	6	11	...	N. 72 34 E.	.36		
	October	6	23	12	15	7	2	4	24	...	N. 42 14 E.	.27		
	November	10	10	4	23	6	4	3	30	...	N. 1 41 E.	.15		
	December	9	18	10	9	3	4	7	33	...	N. 7 3 W.	.36		
	Spring	228	117	344	102	441	100	195	82	...	S. 39 9 E.	.17		
	Summer	230	57	213	71	393	83	281	48	...	S. 19 32 W.	.15		
	Autumn	291	110	375	66	157	34	110	71	...	N. 58 45 E.	.30		
	Winter	326	107	290	81	206	52	232	138	...	N. 15 52 E.	.14½		
	The year	1075	391	1222	320	1197	269	808	339	...	S. 87 19 E.	.08½		
92. Last two combined.	Spring	376	395	746	537	658	506	418	357	...	S. 37 41 E.	.15½	S. 15° W.	.13½
	Summer	306	293	441	386	533	518	540	299	...	S. 23 43 W.	.15	S. 24 W.	.16
	Autumn	405	446	690	303	205	146	209	256	...	N. 62 27 E.	.31	N. 47 E.	.20
	Winter	544	529	681	352	326	254	434	536	...	N. 29 51 E.	.17	N. 17 W.	.14½
	The year	1631	1663	2558	1578	1722	1424	1601	1448	...	S. 89 21 E.	.09		

[1] Fort Pike. [2] Separate months for the first three years only.

(Nos. 93 to 102.) **Mississippi**, north of latitude 31°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Brook Haven,	T. J. R. Keenan,	1	5	1868 and 1869.
Brook Haven (near),[1]	....	0	8	1868 and 1869.
Coffeeville,	....	0	1	1860.
Columbia,	....	0	3	1860.
Columbus,	J. S. Lull,	5	2	1856 to 1859 inclusive, and 1869.
Como,	E. W. Beckwith,	0	1	1849.
Elliot Academy,	....	0	6	1856.
Fayette,	Rev. T. H. Cleland,	1	1	1866 and 1867.
Garlandville,	Rev. E. S. Robinson,	1	5	1854 and 1855.
Grenada,	Prof. A. Moore and Wm. H. Waddell,	4	3	1853, 1859, 1860, 1866, 1867, 1868 and 1869.
Hernando,	Wm. M. Johnston,	0	6	1859 and 1860.
Jackson,	Th. Oakley and A. R. Green,	1	0	1852, 1854 and 1855.
Kingston,	J. E. Smith,	0	8	1866 and 1867.
Lake Washington,	....	0	6	1854.
Marion Court House,	T. W. Florer, M.D.,	1	1	1868 and 1869.

[1] Five miles east of Brookhaven.

(Nos. 93 and 94.) **Mississippi.**—*Continued.*

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Monticello,	J. R. Cribbs,	0	9	1860 and 1861.
Natchez,	J. E. Smith and others,[1]	30	1	1825 to 1842, 1846, 1847, 1856, 1858 to 1862, and 1864 to 1869, all inclusive.
Oxford,	Prof. L. Harper,	1	9	1854 to 1857 inclusive.
Paulding,	Rev. E. S. Robinson,	1	8	1858 and 1859.
P. H. Academies,	....	0	7	1853.
Port Gibson,	Prof. J. Boyd Elliott,	0	7	1855 and 1857.
Prairie Line,	Rev. E. S. Robinson,	0	2	1861.
Salem High School,	....	0	2	1849.
Vicksburg,	A. L. Hatch,	3	3	1840, 1841, 1842 and 1854.
Westville,	J. R. Cribbs,	0	10	1859 and 1860.
Yazoo City,	Col. C. B. Swasey,	0	7	1860 and 1861.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
93. Surface winds at Oxford in the years 1854, '55, '56 & '57.[2]	No. of observations.	Spring	35	49	60	86	67	92	66	90	...	S. 33° 22′ W.	.130	N. 59° E.	.04
		Summer	6	30	32	68	31	81	35	21	...	S. 3 32 W.	.311	S. 25 E.	.20
		Autumn	28	40	35	76	41	50	74	76	...	S. 66 28 W.	.118	N. 4 W.	.08
		Winter	38	41	29	88	38	104	80	117	...	S. 78 18 W.	.221	N. 54 W.	.14
		The year[4]	...	...	...	...	...	...	...	...	...	S. 39 8 W.	.165		
	No. of miles.	Spring	298	262	444	781	655	1262	617	906	...	S. 44 47 W.	.262	S. 76½ W.	.08
		Summer	28	283	262	568	219	556	232	109	...	S. 12 50 E.	.322	S. 49 E.	.23
		Autumn	192	217	249	660	268	388	493	649	...	S. 60 13 W.	.129	N. 7½ W.	.10
		Winter	335	315	245	968	494	927	675	1077	...	S. 61 18 W.	.212	N. 51 W.	.11
		The year[4]	...	...	...	...	...	...	...	...	...	S. 34 35 W.	.198		
	M'n vel. in miles p.h'r.	Spring	8.51	5.35	7.40	9·08	9.78	13.72	9.35	10·07					
		Summer	4.67	9.43	8.19	8.35	7.06	6.86	6.63	5·19					
		Autumn	6·86	5.42	7.11	8.68	6·54	7.76	6·66	8.54					
		Winter	8.82	7.68	8.45	11.00	13.00	8.91	8.44	9·21					
94. Aggregate number of observations at all stations. Latitude 34° to 35°.[3]	Surface wind.	Spring	46	76	60	95	69	128	67	116	41	S. 52 33 W.	.10½		
		Summer	6	30	32	68	31	83	35	21	0	S. 4 23 W.	.31½		
		Autumn	35	72	37	102	42	136	76	109	6	S. 62 3 W.	.16½		
		Winter	48	87	31	114	57	261	84	223	1	S. 77 45 W.	.28½		
		The year[4]	...	...	...	...	..	...	...	...	...	S. 46 0 W.	.18½		
	Motion of clouds.	Spring	26	31	12	11	18	84	96	36	...	S. 85 9 W.	.44½	N. 51 W.	.22
		Summer	9	8	14	20	27	51	27	17	...	S. 39 15 W.	.38	S. 17 E.	.13
		Autumn	21	30	21	44	69	93	57	44	...	S. 41 2 W.	.32	S. 43 E.	.10
		Winter	27	80	23	86	47	136	113	67	...	S. 57 51 W.	.24	N. 46½ E.	.08
		The year[4]	...	...	...	...	...	...	...	...	..	S. 57 25 W.	.32½		
	2 preceding combined.	Spring	72	107	72	106	87	212	163	152	41	S. 74 0 W.	.20	N. 10 W.	.09
		Summer	15	38	46	88	58	134	62	38	0	S. 18 22 W.	.32	S. 26 E.	.17½
		Autumn	56	102	58	146	111	229	133	153	6	S. 50 32 W.	.22	N. 50½ E.	.01
		Winter	75	167	54	200	104	397	197	290	1	S. 71 21 W.	.26	N. 47½ W.	.09½
		The year[4]	...	...	...	...	...	...	...	...	...	S. 50 37 W.	.23		

[1] R. McCary and Tooley.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.59	7.42	7.42	9.41	8.46
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.25	2.31	.88	2.08	1.40
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.51	2.39	.96	2.00	1.68
Excess of the latter over the former	+1.26	+.08	+.08	—.08	+.28

[3] Observed at Como, Hernando and Oxford.

[4] Computed from the resultants for the seasons.

(Nos. 95 to 98.) **Mississippi.**—*Continued.*

Place and kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
95. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] Lat. 33° to 34°.	No. of observations.	Spring	75	65	40	74	52	83	41	160	...	N. 46° 22′ W.	.175		
		Summer	62	55	78	43	74	87	74	104	...	N. 82 10 W.	.108		
		Autumn	63	40	104	71	69	35	36	120	...	N. 48 54 E.	.091		
		Winter	50	39	45	62	51	13	49	52	...	N. 64 20 E.	.066		
		The year[4]	...	...	...	...	...	...	...	...	...	N. 45 0 W.	.079		
	No. of miles.	Spring	274	226	121	298	275	525	223	875	...	N. 74 50 W.	.266	N. 68° W.	.18
		Summer	178	224	306	194	311	382	244	453	...	S. 75 11 W.	.106	S. 24½ W.	.03
		Autumn	284	132	341	358	339	140	160	555	...	N. 24 37 E.	.037	N. 76 E.	.11
		Winter	208	114	140	286	303	62	224	230	...	S. 4 28 W.	.060	S. 52½ E.	.11
		The year[4]	...	...	...	...	...	...	...	...	...	N. 85 59 W.	.092		
	M'n vel. in miles p. h'r.	Spring	3.65	3.48	3.02	4.03	5.29	6.33	5.44	5.47					
		Summer	2.87	4.07	3.92	4.51	4.20	4.39	3.30	4.36					
		Autumn	4.51	4.40	3.28	5.04	4.91	4.00	4.44	4.62					
		Winter	4.16	2.92	3.11	4.61	5.94	4.77	4.57	4.42					
96. Aggregate number of observations at all stations.[2] Lat. 32° to 34°.	Surface winds.	Spring	323	247	135	482	445	283	195	565	1	S. 58 23 W.	.06		
		Summer	257	291	212	382	298	276	209	395	5	S. 11 45 E.	.01		
		Autumn	317	271	228	363	240	131	128	435	2	N. 33 8 E.	.13		
		Winter	382	196	180	446	323	155	169	440	2	N. 27 50 E.	.04		
		The year[4]	...	...	...	...	...	...	...	...	...	N. 18 17 E.	.03		
	Motion of clouds.	Spring	26	14	8	26	78	148	242	124	...	S. 78 59 W.	.61	N. 85 W.	.16
		Summer	52	49	68	71	101	122	143	141	...	S. 73 49 W.	.24½	N. 74 E.	.21
		Autumn	26	5	25	35	54	56	123	66	...	S. 74 53 W.	.41	N. 68 E.	.05
		Winter	20	7	14	18	54	117	141	47	...	S. 67 57 W.	.58	S. 47 W.	.13
		The year[4]	...	...	...	...	...	...	...	...	...	S. 73 57 W.	.46		
	2 preceding combined.	Spring	349	261	143	508	523	431	437	689	1	S. 72 57 W.	.17	S. 62 W.	.10
		Summer	309	340	280	453	399	398	352	536	5	S. 67 9 W.	.06	S. 34½ E.	.03
		Autumn	343	276	253	398	294	187	251	501	2	N. 2 27 W.	.07½	N. 42 E.	.10
		Winter	402	203	194	464	377	272	310	487	2	S. 87 37 W.	.06½	S. 59 E.	.01
		The year[4]	...	...	...	...	...	...	...	...	...	S. 89 24 W.	.07		
97. Vicksburg.		The year	1119	132	396	315	846	87	249	144	...	N. 58 28 E.	.10½		
98. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[3] Lat. 32° to 33°.	No. of observations.	Spring	25	29	11	51	111	103	44	68	...	S. 37 37 W.	.315	S. 47 W.	.17
		Summer	4	4	24	10	48	6	24	2	...	S. 4 45 E.	.423	S. 20 E.	.30
		Autumn	123	29	37	33	67	11	51	12	...	N. 14 9 E.	.148	N. 20 E.	.29
		Winter	116	14	17	42	98	79	29	76	...	S. 87 16 W.	.160	N. 42½ W.	.13
		The year[4]	...	...	...	...	...	...	...	...	...	S. 27 29 W.	.151		
	No. of miles.	Spring	118	102	26	205	408	532	160	392	...	S. 51 0 W.	.337		
		Summer	12	41	76	24	150	16	94	16	...	S. 2 25 E.	.291		
		Autumn	499	94	193	129	268	32	212	76	...	N. 14 43 E.	.157		
		Winter	466	34	60	176	407	408	153	569	...	N. 83 30 W.	.257		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 61 16 W.	.145		
	M'n vel. in miles p. h'r.	Spring	4.72	3.52	2.36	4.02	3.68	5.17	3.64	5.76					
		Summer	3.00	10.25	3.17	2.40	3.12	2.67	3.91	8.00					
		Autumn	4.06	3.24	5.22	3.91	4.00	2.91	4.16	6.33					
		Winter	4.02	2.43	3.53	4.19	4.15	5.16	5.28	7.49					

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.77	3.97	4.29	4.34	4.34
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.83	.43	.39	.29	.34
True velocity in mean direction, giving to the winds from the several points of the compass, each their own average velocity, as shown in the table above	1.27	.42	.16	.26	.40
Excess of the latter over the former	+.44	—.01	—.23	—.03	+.06

[2] Observed at Coffeeville, Columbus, Grenada and Lake Washington.

[3] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	4.30	3.57	4.14	4.83	4.21
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.35	1.51	.61	.77	.64
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.45	1.04	.65	1.24	.61
Excess of the latter over the former	+.10	—.47	+.04	+.47	—.03

[4] Computed from the resultants for the seasons.

(Nos. 99 to 102.) **Mississippi.**—*Continued.*

Place and kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
			Relative Prevalence of Winds from the Different Points of the Compass.												
99. Aggregate number of observations at all stations.[1] Lat. 32° to 33°.	Surface wind.	Spring	211	129	103	281	321	684	274	393	189	S. 56° 38′ W.	.30		
		Summer	149	221	146	206	163	340	178	149	120	S. 28 43 W.	.09		
		Autumn	224	178	165	195	145	117	133	182	142	N. 36 45 E.	.09½		
		Winter	294	153	98	230	244	380	205	434	114	N. 49 32 W.	.25		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 82 57 W.	.11		
	Motion of clouds.	Spring	67	141	59	166	192	496	212	145	...	S. 44 53 W.	.37	S. 48° W.	.12
		Summer	19	176	75	148	65	230	118	97	...	S. 20 34 W.	.14	N. 66½ E.	.13
		Autumn	31	100	91	137	54	146	124	103	...	S. 27 33 W.	.11½	N. 56½ E.	.14
		Winter	66	66	43	134	169	382	163	196	...	S. 53 53 W.	.39	S. 72½ W.	.15
		The year[4]	...	...	...	...	...	...	...	...	...	S. 43 13 W.	.25		
	2 preceding combined.	Spring	278	270	162	447	513	1180	486	538	189	S. 51 44 W.	.32	S. 50 W.	.18
		Summer	168	397	221	354	228	570	296	246	120	S. 25 4 W.	.11	S. 78 E.	.06½
		Autumn	255	278	256	332	199	263	257	285	142	N. 52 6 E.	.01½	N. 52 E.	.16
		Winter	360	219	141	364	413	762	368	630	114	S. 72 42 W.	.17	N. 56 W.	.06
		The year[4]	...	...	...	...	...	...	...	...	...	S. 52 57 W.	.14		
100. Natchez.		The year	1911	688	1395	1140	2027	1460	637	465	...	S. 31 2 E.	.13		
101. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2] Lat. 31° to 32°.	No. of observations.	Spring	44	17	11	21	21	8	12	9	...	N. 33 33 E.	.139		
		Summer	0	4	1	2	3	3	1	0	...	S. 29 49 E.	.305		
		Autumn	99	31	46	16	38	14	37	22	...	N. 12 15 E.	.258		
		Winter	89	42	24	33	47	28	35	25	...	N. 5 38 E.	.136		
		The year[4]	...	...	...	...	...	...	...	...	...	N. 51 5 E.	.095		
	No. of miles.	Spring	332	50	26	87	105	50	48	52	...	N. 0 47 E.	.214		
		Summer	0	30	4	14	10	16	12	0	...	S. 49 44 E.	.179		
		Autumn	442	101	249	76	220	32	169	97	...	N. 21 45 E.	.219		
		Winter	512	112	68	153	287	145	217	213	...	N. 41 20 W.	.179		
		The year[4]	...	...	...	...	...	...	...	...	...	N. 16 19 E.	.100		
	M'n vel. in miles p.h'r.	Spring	7.55	2.94	2.36	4.14	5.00	6.25	4.00	5.78					
		Summer	0	7.50	4.00	7.00	3.33	5.33	12.00	0					
		Autumn	4.46	3.26	5.41	4.75	5.79	2.29	4.57	4.41					
		Winter	5.75	2.67	2.83	4.64	6.11	5.18	6.20	8.52					
102. Aggregate number of observations at all stations.[3] Lat. 31° to 32°.	Surface winds.	Spring	673	428	271	675	858	868	283	434	167	S. 12 54 W.	.14½		
		Summer	569	474	282	651	808	1017	315	375	259	S. 15 10 W.	.18		
		Autumn	1228	601	451	719	648	621	315	531	384	N. 30 29 E.	.09		
		Winter	946	559	282	817	746	711	429	564	212	S. 41 11 W.	.02		
		The year[4]	...	...	...	...	...	...	...	...	...	S. 79 47 W.	.06½		
	Motion of clouds.	Spring	45	46	6	40	170	370	195	99	...	S. 55 49 W.	.57½	N. 57½ W.	.25
		Summer	65	205	129	219	223	231	118	148	...	S. 18 18 E.	.10	N. 72 E.	.31
		Autumn	66	129	42	145	133	301	174	148	...	S. 53 54 W.	.28	N. 54 E.	.05
		Winter	116	65	25	106	139	429	231	181	...	S. 66 14 W.	.43½	N. 86 W.	.13
		The year[4]	...	...	...	...	...	...	...	...	...	S. 54 46 W.	.32½		
	2 preceding combined.	Spring	718	474	277	715	1028	1238	478	533	167	S. 32 2 W.	.20½	S. 31 W.	.10
		Summer	634	679	411	870	1031	1248	433	523	259	S. 9 43 W.	.17½	S. 18 E.	.09
		Autumn	1294	730	493	864	781	922	489	679	384	N. 0 13 W.	.04	N. 28½ E.	.14½
		Winter	1062	624	307	923	885	1140	660	745	212	S. 62 1 W.	.10	N. 43 W.	.05
		The year[4]	...	...	...	...	...	...	...	...	...	S. 32 34 W.	.10½		

[1] Observed at Garlandsville, Jackson, Marion, Paulding, P. H. Academies, Prairie Line, Vicksburg and Yazoo City.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.24	6.14	4.57	5.29	5.31
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.73	1.87	1.18	.72	.50
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.12	1.10	1.00	.95	.53
Excess of the latter over the former	+.39	—.77	—.18	+.23	+.03

[3] Observed at Brook Haven, Columbia, Elliott Academy, Fayette, Kingston, Monticello, Natchez, Port Gibson, Salem High School, Washington and Westville.

[4] Computed from the resultants for the seasons.

(Nos. 103 to 106.) **Alabama and Mississippi,** south of latitude 31°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Biloxi, Miss.,	....	0	1	1849.
Bon Secour, Ala.,	W. J. Van Kirk,	0	3	1866.
Camp Lawson, Miss., Camp Twiggs, Miss., East Pascagoula, Miss.,	Post Surgeon,	1	7	1849 to 1853 inclusive.
Fish River, Ala.,	W. J. Van Kirk,	1	11	1867, 1868 and 1869.
Fort Morgan, Ala.,	Post Surgeon and Coast Survey,	2	7	1843, 1847, 1848 and 1849.
Gainesville, Miss.,	Chas. A. Folsom,	0	2	1849.
Mobile, Ala.,	Rev. J. J. Nicholson and North,	2	9	1840, 1841, 1842, 1852 and 1869.
Pass Christian, Miss.,	Post Surgeon,	0	9	1843, 1844 and 1845.
Spring Hill College, Ala.,	A. Cornette S. J. and Fabre,	1	2	1840, 1859 and 1866.

RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.
103. Fort Morgan.[1]	Spring	5808	2205	1851	1238	2065	6150	2106	2548	2490	2731	3611	2693	1188	319	553	985	...
	Summer	2227	455	1042	1191	2266	2122	1824	1351	3290	1133	6294	2647	2145	655	889	499	...
	Autumn	8333	3635	5783	5240	1961	2541	1884	1062	1164	743	1180	813	976	410	1052	997	...
	Winter	6072	2215	2063	2318	2744	3396	1591	1646	888	515	612	856	930	653	834	1633	...
	The year	22440	8510	10739	9987	9036	14209	7405	6607	7832	5122	11697	7009	5239	2037	3328	4024	...
104. Spring Hill College.	The year	182	...	99	...	86	...	115	...	150	...	102	...	67	...	102	...	377
105. Mobile.	The year	510	...	273	...	48	...	255	...	813	...	144	...	57	...	87	...	...
106. Aggreg. at all stat'ns.	Spring	203	...	97	...	83	...	232	...	268	...	176	...	94	...	110	...	114
	Summer	492	...	439	...	286	...	584	...	610	...	468	...	416	...	350	...	298
	Autumn	777	...	420	...	296	...	367	...	278	...	161	...	96	...	220	...	203
	Winter	354	...	168	...	104	...	147	...	174	...	111	...	83	...	154	...	133
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Place of observation.	Time of the year.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
103. Fort Morgan.	Spring	S. 54° 37′ E.	.16	....	...	184
	Summer	S. 19 43 W.	.28	....	...	184
	Autumn	N. 42 3 E.	.47	....	...	182
	Winter	N. 49 45 E.	.35	....	...	181
	The year	N. 69 38 E.	.18	....	...	731
104. Spring Hill College.	The year	N. 51 34 E.	.03			
105. Mobile.	The year	S. 21 10 E.	.19			
106. Aggregate at all stations.	Spring	S. 3 24 E.	.15	S. 15° W.	.19	
	Summer	S. 2 49 E.	.08	S. 25 W.	.12½	
	Autumn	N. 40 7 E.	.27	N. 34 E.	.21	
	Winter	N. 14 3 E.	.16	N. 10 W.	.12½	
	The year[2]	N. 58 47 E.	.06½			

[1] Number of miles.   [2] Computed from the resultants for the seasons.

(Nos. 107 to 109.) **Alabama,** latitude 34° to 35°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Arendale,	Jones,	0	2	June and August, 1845.
Florence,	....	0	8	May to December, 1849.
La Grange,	Tutwiler,	0	8	1843 and 1845.
Moulton,	A. J. Harris and T. J. Peters,	4	0	1866 to 1869 inclusive.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
107. Surface winds.	Spring	115	74	32	196	189	84	83	214	171	S. 46° 1′ W.	.08½		
	Summer	55	45	78	172	110	117	165	114	333	S. 33 24 W.	.15		
	Autumn	59	26	28	76	81	54	35	96	74	S. 55 58 W.	.09		
	Winter	123	48	19	106	148	88	80	136	82	S. 73 49 W.	.14		
	The year[1]	...	...	...	...	...	...	...	...	...	S. 52 7 W.	.11		
108. Motion of clouds.	Spring	53	34	26	17	22	10	22	19	...	N. 21 37 E.	.26	N. 36° W.	.07
	Summer	10	33	31	22	7	5	12	7	...	N. 76 9 E.	.40	S. 71 E.	.26
	Autumn	4	1	2	0	1	2	0	2	...	N. 1 51 W.	.31	N. 50 W.	.19
	Winter	11	24	22	6	11	15	17	10	...	N. 42 54 E.	.11	S. 32 W.	.12
	The year[1]	...	...	...	...	...	...	...	...	...	N. 37 9 E.	.23		
109. The two combined.	Spring	168	108	58	213	211	94	105	233	171	S. 69 42 W.	.04	N. 40 E.	.04
	Summer	65	78	109	194	117	122	177	121	333	S. 19 25 W.	.11	S. 21½ E.	.06
	Autumn	63	27	30	76	82	56	35	98	74	S. 59 45 W.	.09	N. 5 W.	.01
	Winter	134	72	41	112	159	103	97	146	82	S. 77 21 W.	.11	N. 59 W.	.05
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 30 W.	.08		

[1] Computed from the resultants for the seasons.

(Nos. 110 and 111.) **Alabama,** latitude 33° to 34°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Knoxville,	Adams,	0	3	1843, 1844 and 1845.
Tuscaloosa,	Prof. M. Tuomey & Geo. Benagh,	1	0	1854 and 1855.
Wewokaville,	Benj. F. Holly,	0	2	1854.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
110. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[2]	No. of observations.	Spring	3	14	2	5	16	11	9	18	...	S. 83° 9′ W.	.175	S. 85° W.	.13
		Summer	7	24	6	28	27	7	7	12	...	S. 49 11 E.	.124	S. 62 E.	.16
		Autumn	6	20	18	39	6	17	10	35	...	S. 86 52 E.	.054	N. 86 E.	.09½
		Winter	37	37	17	54	28	47	50	100	...	N. 64 36 W.	.158	N. 52 W.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	S. 77 31 W.	.043		
	No. of miles.	Spring	6	62	4	10	124	114	71	178	...	S. 80 49 W.	.381	S. 77 W.	.25
		Summer	28	80	18	190	72	28	38	60	...	S. 47 38 E.	.142	S. 69 E.	.25
		Autumn	35	105	115	275	46	92	74	317	...	N. 36 18 E.	.020	N. 80 E.	.15
		Winter	170	143	68	341	116	166	253	732	...	N. 56 40 W.	.208	N. 19 W.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	S. 87 40 W.	.131		
	M'n vel. in miles p.h'r.	Spring	2.00	4.43	2.00	2.00	7.75	10.36	7.89	9.89					
		Summer	4.00	3.33	3.00	6.79	2.67	4.00	5.43	5.00					
		Autumn	5.83	5.25	6.39	7.05	7.67	5.41	7.40	9.06					
		Winter	4.59	3.86	4.00	6.31	4.14	3.53	5.06	7.32					

[1] Computed from the resultants for the seasons. [2] For note see next page.

(No. 111.) **Alabama.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
111. Aggregate number of observations at all stations.	Surface wind.	Spring	40	20	19	28	80	19	101	61	110	S. 81° 20′ W.	.22		
		Summer	8	24	6	28	27	7	7	12	120	S. 50 41 E.	.12		
		Autumn	28	34	34	51	31	25	53	55	95	N. 68 11 W.	.04		
		Winter	46	44	20	55	30	48	59	102	139	N. 58 16 W.	.16		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 88 4 W.	.07½		
	Motion of clouds.	Spring	0	0	0	0	0	2	4	4	...	N. 80 17 W.	.84		
		Summer	10	7	7	10	9	1	14	10	...	N. 27 47 W.	.09		
		Autumn	5	4	8	10	7	7	15	17	...	N. 86 37 W.	.19½		
		Winter	15	5	1	10	18	49	53	34	...	S. 80 17 W.	.55		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 88 8 W.	.40		
	2 preceding combined.[2]	Spring	40	20	19	28	80	21	105	65	110	S. 82 40 W.	.24	S. 11° W.	.12
		Summer	18	31	13	38	36	8	21	22	120	S. 56 19 E.	.08	S. 13½ E.	.19
		Autumn	33	38	42	61	38	32	68	72	95	N. 76 38 W.	.06	N. 18 E.	.06½
		Winter	61	49	21	65	48	97	112	136	139	N. 80 31 W.	24½	N. 22½ W.	.13
		The year[1]	...	...	...	...	...	...	...	...	...	S. 87 47 W.	.12		

[1] Computed from the resultants for the seasons.

☞ Note from No. 110, page 474.

[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour . . .	7.29	4.37	7.01	5.38	6.01
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.28	.54	.38	.85	.26
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.78	.62	.14	1.12	.79
Excess of the latter over the former	+1.50	+.08	—.24	+.27	+.53

(Nos. 112 to 115.) **Alabama,** latitude 32° to 33°.

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Auburn,	Prof. John Darby,	2	2	1855 to 1858 inclusive.
Boligee,	Col Horace Harding,	0	1	1860.
Cahawba,	Matthew Troy, M.D.,	0	3	1859.
Carlowville,	H. L. Alison, M.D.,	6	3	1856 to 1860 and 1867 to 1869, both inclusive.
Erie,[1]	Dr. T. C. Osborne and Dr. S. K. Jennings,	2	10	1850, 1851 and 1852.
Eutaw,	A. Winchell,	0	10	1850 and 1851.
Glenville,	Taylor,	0	1	1844.
Greensboro,	R. B. Waller & N. T. Lupton,	3	7	1856, 1857, 1858, 1859, 1861 and 1869.
Green Springs,	H. Tutwiler,	5	1	1845 to 1859 inclusive, 1861, 1868 and 1869.
Havana,	Prof. H. Tutwiler,	3	11	1866 to 1869 inclusive.
Livingstone,	Rev. S. U. Smith,	0	10	1859 and 1860.
Mount Airy,	....	0	8	1850 and 1851.
Montgomery,	Rev. J. A. Shepherd and W. L. Foster,	1	8	1849, 1858, 1859 and 1860.
Newbern,	....	0	2	1850.
Opelika,	J. H. Shields,	0	9	1867, 1868 and 1869.
Orville,	Dr. S. K. Jennings & others,[2]	0	5	1859 and 1860.
Prairie Bluff,	Wm. Henderson and R. M. Reynolds,	0	10	1867.
Selma,	Dr. S. K. Jennings,	1	6	1858 and 1859.
Springfield,	Adams,	0	1	1845.
Tuskegee,	E. B. Jennings,	1	4	1840, 1842 and 1846.
Uniontown,	Rev. R. A. Cobbs,	1	6	1859, 1860 and 1867.

[1] Not used. [2] T. A. Huston and J. A. Coleman.

(Nos. 112 to 115.) **Alabama.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
112. Eutaw. Surface wind.	The year	295	103	53	302	175	122	107	204	99	N. 2° 52′ E.	.03		
112. Eutaw. Motion of clouds.	The year	79	33	11	85	62	227	310	179	474	S. 84 2 W.	.35		
112. Eutaw. The two combined.	The year	374	136	64	387	237	349	417	383	573	S. 88 7 W.	.17		
113. Tuskeegee.	The year	17	103	104	198	4	78	50	98	...	S. 69 13 E.[3]	.22½		
114. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[1] No. of observations.	Spring	174	193	115	275	224	385	271	340	...	S. 67 31 W.	.177	N. 86° W.	.10
	Summer	129	157	159	414	286	294	288	214	...	S. 12 .3 W.	.203	S. 9 E.	.11
	Autumn	214	224	297	552	178	264	225	326	...	S. 42 30 E.	.102	N. 85 E.	.13
	Winter	237	143	136	365	218	216	255	433	...	N. 85 57 W.	.106	N. 26 W.	.11
	The year[2]	...	...	...	...	...	...	...	...	...	S. 34 39 W.	.099		
No. of miles.	Spring	1542	897	622	1512	1175	1820	1574	2162	...	N. 85 21 W.	.175	N. 66 W.	.13
	Summer	560	706	644	1466	976	1039	1044	909	...	S. 13 1 W.	.143	S. 9 E.	.10
	Autumn	1145	1539	1669	3181	788	1198	1087	2031.5	...	S. 82 31 E.	.128	N. 83 E.	.18
	Winter	1378	662	862	2586	1212	1325	1790	2850	...	S. 85 48 W.	.122	N. 67 W.	.08
	The year[2]	...	...	...	...	...	...	...	...	...	S. 53 30 W.	.063		
Mean vel. in miles per hour.	Spring	8.86	4.65	5.41	5.50	5.25	4.73	5.81	6.36					
	Summer	4.34	4.50	4.05	3.54	3.41	3.53	3.62	4.25					
	Autumn	5.35	6.87	5.62	5.76	4.43	4.54	4.83	6.23					
	Winter	5.81	4.63	6.34	7.03	5.56	6.13	7.02	6.58					
115. Aggregate number of observations at all stations. Surface winds.	Spring	853	637	680	1209	941	1191	1016	1125	397	S. 51 6 W.	.11		
	Summer	687	702	956	1456	1000	1075	1144	863	499	S. 1 52 W.	.12		
	Autumn	1292	924	1110	1404	713	720	839	1383	534	N. 31 16 E.	.09		
	Winter	1273	690	623	1298	869	852	977	1567	374	N. 53 56 W.	.09½		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 66 16 W.	.03		
Motion of clouds.	Spring	201	127	82	181	395	836	959	465	...	S. 72 37 W.	.51		
	Summer	305	254	301	438	402	517	747	600	...	S. 77 17 W.	.21½		
	Autumn	225	158	196	443	324	464	567	374	...	S. 55 55 W.	.23½		
	Winter	120	84	95	237	273	639	880	517	...	S. 75 50 W.	.50		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 71 46 W.	.36		
The two combined.	Spring	1054	764	762	1390	1336	2027	1975	1590	397	S. 65 18 W.	.22	S. 33 W.	.10
	Summer	992	956	1257	1894	1402	1592	1891	1463	499	S. 33 47 W.	.12	S. 37½ E.	.08
	Autumn	1517	1082	1306	1847	1037	1184	1406	1757	534	N. 17 29 W.	.03	N. 56½ E.	.12½
	Winter	1393	774	718	1535	1142	1491	1857	2084	374	N. 86 17 W.	.18	N. 51½ W.	.08
	The year	4956	3576	4043	6666	4917	6294	7129	6894	1804	S. 71 35 W.	.12		

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.72	3.78	5.54	6.32	5.34
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.01	.77	.60	.67	.53
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.00	.54	.71	.77	.17
Excess of the latter over the former	—.01	—.23	+.11	+.10	—.36

[2] Computed from the resultants for the seasons.

[3] Computed from the original record, in which the direction of the wind was noted for sixteen points of the compass.

(Nos. 116 and 117.) **Alabama,** latitude 31° to 32°.

Observed at the following places, viz. :—

Monroeville, by S. J. Cumming, for eleven months, in the year 1852.

Mount Vernon Arsenal, by the Post Surgeon, for an aggregate period of sixteen years, in the years 1843 to 1859 inclusive.

(Nos. 116 and 117.) **Alabama.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
116. Mount Vernon Arsenal.	January	259	329	68	205	156	172	45	456					
	February	178	222	57	254	171	214	58	387					
	March	172	269	56	300	201	211	69	404					
	April	151	196	83	394	222	209	76	331					
	May	124	227	127	453	225	235	109	329					
	June	81	273	118	424	150	334	123	247					
	July	106	219	104	383	162	287	208	370					
	August	100	361	159	391	113	212	166	419					
	September	184	653	178	399	71	114	46	233					
	October	248	604	177	279	73	95	53	383					
	November	266	325	137	298	132	151	68	484					
	December	281	334	96	248	173	189	75	510					
	Spring	447	692	266	1147	648	655	254	1064	...	S. 22° 31′ W.	.05		
	Summer	287	853	381	1198	425	833	497	1036	...	N. 3 3 E.	.04½		
	Autumn	698	1582	492	976	276	360	167	1100	...	N. 38 44 E.	.31		
	Winter	718	885	221	707	500	575	178	1353	...	N. 12 17 W.	.18		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 18 38 E.	.11		
117. Aggregate at all stations.	Spring	451	696	288	1164	669	673	290	1073	53	S. 16 28 E.	.05	S. 13° W.	.13
	Summer	289	872	416	1224	429	861	527	1044	20	S. 5 18 E.	.04½	S. 18 W.	.13
	Autumn	734	1586	535	992	280	377	186	1117	18	N. 38 35 E.	.30½	N. 42 E.	.22
	Winter	740	885	246	724	512	579	192	1368	15	N. 11 37 W.	.17½	N. 40 W.	.12
	The year[1]	...	...	...	...	...	...	...	...	...	N. 29 8 E.	.09		

[1] Computed from the resultants for the seasons.

(Nos. 118 to 121.) **Western Florida,** north of latitude 30°

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Belair,	B. F. Whitney,	1	11	1856, 1857, 1860 and 1861.
Chattahoochee,	M. Martin,	0	9	1869.
Fort Barrancas,	Post Surgeon,	10	1	1844 to 1859 inclusive, except 1848 and 1850.
Knox Hill,	John Newton,	1	10	1854 and 1855.
Pensacola,	Post Surgeon,	7	0	1822 to 1824 and 1826 to 1829, both inclusive.
Seville,	....	0	9	1859 and 1860.
Warrington,	Thayer Abert,	4	5	1854 to 1859 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
118. Fort Barrancas.	January	386	148	173	75	78	67	115	282					
	February	215	124	99	159	96	113	88	204					
	March	207	81	158	157	111	151	100	182					
	April	129	82	105	206	171	169	113	133					
	May	129	52	73	148	190	197	103	115					
	June	94	71	56	123	141	217	93	157					
	July	115	69	43	128	159	271	215	223					
	August	151	116	53	107	80	200	110	242					
	September	220	151	111	169	67	94	53	189					
	October	310	98	86	83	45	54	47	128					
	November	327	147	68	106	81	68	53	201					
	December	328	184	84	98	74	58	76	293					
	Spring	465	215	336	511	472	517	316	430	...	S. 26° 8′ W.	.09½	S. 6° E.	.21
	Summer	360	256	152	358	380	688	418	622	...	S. 79 38 W.	.24	S. 46½ W.	.24
	Autumn	857	396	265	358	193	216	153	518	...	N. 7 56 E.	.31	N. 30 E.	.21
	Winter	929	456	356	332	248	238	279	779	...	N. 4 13 W.	.32	N. 12 E.	.20
	The year[1]	...	...	...	...	...	...	...	...	...	N 27 21 W.	.14		

[1] Computed from the resultants for the seasons.

(Nos. 119 to 121.) **Western Florida.**—*Continued.*

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
119. Pensacola (Cantonment Clinch).		January	29	41	9	41	28	25	6	38					
		February	32	20	12	30	25	43	4	32					
		March	19	15	20	40	44	45	7	27					
		April	11	7	2	49	43	70	6	22					
		May	6	8	3	22	53	96	6	21					
		June	6	9	1	25	34	102	20	13					
		July	17	11	5	23	25	102	13	21					
		August	11	28	4	30	35	72	9	27					
		September	15	21	8	51	24	60	4	27					
		October	28	41	7	56	22	24	4	35					
		November	25	18	8	52	19	29	3	56					
		December	17	35	20	53	27	18	10	37					
		Spring	36	30	25	111	140	211	19	70	...	S. 19° 37′ W.	.43		
		Summer	34	48	10	78	94	276	42	61	...	S. 37 51 W.	.46		
		Autumn	68	80	23	159	65	113	11	118	...	S. 19 42 E.	.08		
		Winter	78	96	41	124	80	86	20	107	...	S. 80 10 E.	.06½		
		The year	216	254	99	472	379	686	92	356	...	S. 21 28 E.	.23		
120. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	116	250	116	283	147	436	112	196	...	S. 16 25 W.	.135		
		Summer	51	211	143	322	197	522	103	149	...	S. 6 44 W.	.279		
		Autumn	157	472	286	272	112	203	99	247	...	N. 61 23 E.	.235		
		Winter	178	408	106	129	57	173	85	320	...	N. 7 2 E.	.275		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 87 59 E.	.043		
	No. of miles.	Spring	994	2103	750	2486	1147	4225	736	1504	...	S. 18 37 W.	.169		
		Summer	274	1784	695	2650	1134	4554	442	739	...	S. 4 51 W.	.328		
		Autumn	1217	4248	1942	2287.5	543	1527	509	1710	...	N. 59 49 E.	.299		
		Winter	1488	3559	810	1265	568	2035	788	2981	...	N. 2 23 W.	.225		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 67 33 E.	.041		
	M'n vel. in miles p. h'r.	Spring	8.51	8.41	6.47	8.78	7.80	9.69	6.57	7.67					
		Summer	5.37	8.45	4.86	8.23	5.76	8.72	4.29	4.96					
		Autumn	7.75	9.00	6.79	8.41	4.85	7.62	5.14	6.92					
		Winter	8.36	8.72	7.64	9.81	9.97	11.76	9.27	9.32					
121. Aggregate number of observations at all stations.	Surface wind.	Spring	634	585	497	929	789	1220	463	745	111	S. 21 13 W.	.13		
		Summer	462	654	343	811	708	1514	576	850	150	S. 46 26 W.	20		
		Autumn	1135	1169	591	904	400	631	278	962	130	N. 29 26 E.	.21½		
		Winter	1231	1113	522	654	398	545	391	1280	116	N. 3 4 E.	.27		
		The year	3462	3521	1953	3298	2295	3910	1708	3837	507	N. 17 54 W.	.05½		
	Motion of clouds.	Spring	26	79	32	152	74	357	191	275	...	S. 70 24 W.	.39½		
		Summer	75	198	109	230	75	366	168	201	...	S. 48 28 W.	.15		
		Autumn	42	220	120	258	86	293	152	182	...	S. 11 19 W.	.11		
		Winter	48	97	28	106	59	282	169	265	...	S. 85 38 W.	.37		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 66 50 W.	.24		
	2 preceding combined.	Spring	660	664	529	1081	863	1577	654	1020	111	S. 39 13 W.	.16	S. 19° W.	.16
		Summer	537	852	452	1041	783	1880	744	1051	150	S. 46 44 W.	.19	S. 29½ W.	.18
		Autumn	1177	1389	711	1162	486	924	430	1144	130	N. 31 43 E.	.15½	N. 51½ E.	.16½
		Winter	1279	1210	550	760	457	827	560	1545	116	N. 10 7 W.	.23	N. 3 E.	.20
		The year	3653	4115	2242	4044	2589	5208	2388	4760	507	N. 60 46 W.	.05½		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.42	7.23	7.57	9.27	8.12
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.14	2.02	1.78	2.55	.35
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.43	2.37	2.27	2.08	.33
Excess of the latter over the former	+.29	+.35	+.49	—.47	—.02

[2] Computed from the resultants for the seasons.

(Nos. 122 to 128.) **Georgia,** latitude 33° to 35°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Athens,	Profs. McCay & J. D. Easter,	2	4	1845, 1857 and 1858.
Atlanta,	J. G. Westmoreland and others,[1]	4	5	1859, 1860 and 1865 to 1869 inclusive.
Augusta,	Holbrook and others,[2]	5	8	1840 to 1843 inclusive, 1854, 1858, 1859 and 1860.
Augusta Arsenal,	Post Surgeon,	17	4	1826 to 1835 and 1839 to 1846, both inclusive.
Clarksville,	Col. J. R. Stanford and J. Van Buren,	1	4	1859, 1860 and 1861.
Covington,	Benj. F. Camp,	2	0	1859, 1860 and 1861.
Dalton,	J. R. McAfee,	0	3	1860.
Factory Mills,	F. T. Simpson,	0	6	1857.
Hillsboro,	Eli S. Glover,	0	11	1857 and 1858.
Milledgeville,	J. M. Cotting and Prof. C. W. Lane,	1	3	1843 and 1849.
Penfield,	Prof. J. E. Willet, M.D.,	1	5	1852, 1853 and 1869.
Philomath,	Jas. M. Reed,	0	2	1857.
Powelton,	P. C. Pendleton,	0	6	1852.
Sparta,	Dr. E. M. Pendleton,	7	2	1854 to 1861 inclusive.
Summerville,	Holbrook and Habersham,	1	4	1839 and 1868.
Thompson,	Dr. W. T. Grant,	0	5	1859.
Zebulon,	Mrs. J. T. Arnold,	2	6	1854, 1856, 1857 and 1858.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
122. Summerville.	The year	...	85	...	55	...	93	...	93	...	N. 55° 38′ W.?	.15	....	...	365
122(a). Latitude 34° to 35°.[3] Surface winds.	Spring	42	100	56	65	21	115	225	98	12	N. 80 34 W.	.28			
	Summer	10	59	107	82	41	126	134	49	32	N. 26 39 W.	.18			
	Autumn	21	75	32	19	18	62	78	49	10	N. 60 4 W.	.18½			
	Winter	37	54	68	35	49	142	225	98	6	S. 83 35 W.	.37			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 73 53 W.	.23			
Motion of clouds.	Spring	12	10	26	1	12	40	63	14	...	S. 79 54 W.	.38½			
	Summer	0	1	1	0	0	0	6	2	...	N. 69 38 W.	.61			
	Autumn	4	12	7	4	1	0	5	5	...	N. 38 44 E.	.41			
	Winter	24	37	34	12	61	102	85	33	...	S. 58 40 W.	.34			
	The year[4]	...	...	...	...	...	...	...	...	...	N. 73 32 W.	.25½			
The two combined.	Spring	54	110	82	66	33	155	288	112	12	N. 85 25 W.	.30	N. 59½° W.	.10	
	Summer	10	60	108	82	41	126	140	51	32	S. 29 41 W.	.17½	N. 44 E.	.17½	
	Autumn	25	87	39	23	19	62	83	54	10	N. 46 37 W.	.16½	N. 33 E.	.17	
	Winter	61	91	102	47	110	244	310	131	6	S. 75 24 W.	.35	S. 58 W.	.14	
	The year[4]	...	...	...	...	...	...	...	...	...	S. 82 54 W.	.21½			
123. Athens.	The year	89	197	132	47	46	196	342	127	149	N. 67 30 W.	.19	....	...	1826
124. Augusta.	The year	...	879	...	612	...	835	...	428	...	S. 15 2 E.	.08	....	...	1461
125. Augusta Arsenal (1826 to 1830 inclusive).	January	13	14	14	19	12	35	21	27	...	S. 73 25 W.	.18½	N. 47 W.		
	February	11	26	9	11	7	29	18	30	...	N. 58 2 W.	.20½	N. 12 W.		
	March	9	18	10	23	21	39	19	16	...	S. 30 42 W.	.24	S. 2 E.		
	April	6	8	7	28	14	46	26	15	...	S. 39 47 W.	.38	S. 15 W.		
	May	7	20	7	28	10	56	16	11	...	S. 28 59 W.	.30	S. 9 W.		
	June	3	25	4	25	9	41	20	23	...	S. 54 8 W.	.21	S. 58 W.		
	July	2	9	8	34	12	59	17	14	...	S. 26 55 W.	.43	S. 9 W.		
	August	7	28	9	38	13	35	7	17	...	S. 24 46 E.	.18	S. 74 E.		
	September	4	28	13	29	12	25	10	29	...	S. 41 3 E.	.05	N. 76 E.		
	October	17	30	9	17	9	22	13	39	...	N. 25 27 W.	.21	N. 12 E.		
	November	7	11	2	25	15	41	15	35	...	S. 61 48 W.	.31	S. 72 W.		
	December	9	25	5	20	17	30	19	30	...	S. 79 44 W.	.16	N. 20 W.		
	The year[4]	...	...	...	...	...	...	...	...	...	S. 52 40 W.	.16			
126. Augusta Arsenal (entire period).	Spring	204	525	250	789	418	1314	509	520	...	S. 33 5 W.	.25½			
	Summer	155	437	278	641	428	1187	455	539	...	S. 35 58 W.	.26			
	Autumn	329	659	271	513	303	869	366	795	...	N. 80 9 W.	.11			
	Winter	339	509	236	422	375	999	590	917	...	S. 88 23 W.	.24			
	The year[4]	...	...	...	...	...	...	...	...	...	S. 57 9 W.	.19			

[1] Fred. Deckner and son.
[2] Wm. Haines, Wm. Schley and Wm. H. Doughty, M.D.
[3] Observed at Clarksville, Dalton and Summerville.
[4] Computed from the resultants for the seasons.

(Nos. 127 and 128.) **Georgia.**—*Continued.*

Place of observation.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
127. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] Latitude 33° to 34 .	No. of observations.	Spring	44	251	220	218	64	346	304	486	...	N. 73° 17′ W.	.178		
		Summer	55	310	162	183	75	378	238	253	...	S. 83 53 W.	.104		
		Autumn	60	478	276	143	46	190	153	305	...	N. 32 33 E.	.239		
		Winter	57	251	196	136	66	254	318	426	...	N. 59 30 W.	.221		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 43 32 W.	.122		
	No. of miles.	Spring	215	1756	1568	1682	404	2560	3229	4547	...	N. 73 24 W.	.270		
		Summer	372	2161	1321	896	406	2008	1648	1740	...	N. 50 33 W.	.099		
		Autumn	250	3479½	2420	888	201	1106	1214	2785½	...	N. 26 41 E.	.278		
		Winter	295	1771	1357	1074	403	1978	2425	3736	...	N. 62 16 W.	.264		
		The year[3]	...	...	...	...	...	...	...	...	...	N. 42 10 W.	.172		
	M'n vel. in miles p. h'r.	Spring	4.89	7.00	7.13	7.72	6.31	7.40	10.62	9.36					
		Summer	6.76	6.97	8.15	4.90	5.41	5.31	6.92	6.88					
		Autumn	4.17	7.28	8.77	6.21	4.37	5.82	7.93	9.13					
		Winter	5.18	7.06	6.92	7.90	6.10	7.79	7.63	8.77					
128. Latitude 33° to 34°.[2]	Surface winds.	Spring	434	1345	847	1627	801	2884	1743	2023	251	S 62 46 W.	.21½		
		Summer	355	1412	811	1583	789	2523	1226	1312	341	S. 35 34 W.	.17		
		Autumn	714	2379	944	1194	520	1787	1083	2090	130	N. 15 52 W.	.12		
		Winter	656	1676	902	1101	698	2257	1777	2697	159	N. 74 22 W.	.21		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 83 15 W.	.13½		
	Motion of clouds.	Spring	64	135	79	130	120	580	450	290	...	S. 72 8 W.	.45½		
		Summer	88	321	141	212	101	519	357	355	...	S. 83 31 W.	.22½		
		Autumn	51	278	151	182	101	366	264	246	...	S. 73 6 W.	.14		
		Winter	55	178	49	95	81	430	408	259	...	S. 82 18 W.	.42½		
		The year[3]	...	...	...	...	...	...	...	...	...	S. 77 45 W.	.31		
	The two combined.	Spring	498	1480	926	1757	921	3464	2193	2313	251	S. 65 0 W.	.24½	S. 50° W.	.12½
		Summer	443	1733	952	1795	890	3042	1583	1667	341	S. 5 43 W.	.12	S. 50 E.	.15
		Autumn	765	2657	1095	1376	621	2153	1347	2336	130	N. 25 58 W.	.10½	N. 35 E.	.14
		Winter	711	1854	951	1196	779	2687	2185	2956	159	N. 80 26 W.	.23	N. 58 W.	.11½
		The year[3]	...	...	...	...	...	...	...	...	...	S. 81 46 W.	.15½		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.26	6.38	7.48	7.65	7.44
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.47	.66	1.79	1.69	.91
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.23	.63	2.08	2.02	1.28
Excess of the latter over the former	+.76	—.03	+.29	+.33	+.37

[2] Observed at Athens, Atlanta, Augusta, Augusta Arsenal, Covington, Factory Mills, Hillsboro, La Grange, Milledgeville, Penfield, Philomath, Powelton, Sparta, Thompson and Zebulon.

[3] Computed from the resultants for the seasons.

(Nos. 129 to 132.) **Georgia**, latitude 30° to 33°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Berne,	H. L. Hillyer,	0	7	1869.
Bóston,	Rev. W. Blewitt,	0	2	1860.
Catiola,	....	0	3	1853.
Culloden,	John Darby,	0	8	1853 and 1854.
Cuthbert,	Chas. C. Seavey,	0	4	1860.
Lewis High School,	Miss L. J. Whitney,	0	9	1868 and 1869.
Macon,	J. F. Adams,	1	0	1868 and 1869.
Oglethorpe Barracks,	Post Surgeon,	6	8	1834, 1835, 1843 to 1846 inclusive, and 1850.
Perry,	Dr. Geo. F. Cooper,	1	0	1852.
Savannah,	John F. Posey and others,[1]	8	6	1832 to 1834, 1843, 1845 and 1853 to 1859, all inclusive.
The Rock,	Dr. Jas. Anderson,	2	10	1854, 1856 and 1857.
Thomastown,	Dr. James Anderson,	1	0	1859.
Thornhill,	....	0	4	1849.
Whitemarsh Island,	R. T. Gibson,	8	1	1843 to 1845 and 1854 to 1861, both inclusive.

[1] Oemler and Gibson.

(Nos. 129 to 132.) **Georgia.**—*Continued.*

Place and kind of observations		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
			Relative Prevalence of Winds from the Different Points of the Compass.												
129. Savannah.		The year	301	113	386	117	426	124	432	95	...	S. 14° 27′ W.	.07½		
130. Oglethorpe Barracks.		January	74	59	58	30	80	56	156	46					
		February	71	50	80	16	78	53	136	80					
		March	68	88	61	40	121	53	145	69					
		April	62	73	115	26	135	79	121	27					
		May	73	60	119	59	161	61	103	41					
		June	50	64	101	99	138	52	90	19					
		July	40	44	70	63	200	97	89	30					
		August	94	53	119	55	110	57	110	21					
		September	145	103	122	46	45	29	72	25					
		October	149	66	65	20	61	37	70	32					
		November	102	66	58	33	72	24	94	33					
		December	87	53	50	26	54	28	155	61					
		Spring	203	221	295	125	417	193	369	137	...	S. 18 39 W.	.10		
		Summer	184	161	290	217	448	206	289	70	...	S. 10 21 E.	.22		
		Autumn	396	235	245	99	178	90	236	90	...	N. 20 34 E.	.21½		
		Winter	232	162	188	72	212	137	447	187	...	N. 69 45 W.	.21		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 72 37 W.	.03		
131. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	149	260	171	306	401	321	237	347	...	S. 27 26 W.	.127		
		Summer	114	133	95	252	541	325	216	141	...	S. 15 32 W.	.336		
		Autumn	270	427	142	188	150	122	143	269	...	N. 21 50 E.	.220		
		Winter	199	280	120	118	198	234	214	424	...	N. 48 2 W.	.184		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 61 41 W.	.058		
	No. of miles.	Spring	1026	3281	1419	1946	3570	2567	1628	3404	...	S. 36 5 W.	.663		
		Summer	467	1293	939	1677	3870	1884	920	641	...	S. 4 11 E.	.359		
		Autumn	1609	5167	996	1046	1043	980	802	2102	...	N. 29 24 E.	.314		
		Winter	996	2568	559	613	1623	1496	1250	3590	...	N. 42 21 W.	.210		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 7 54 E.	.019		
	M'n vel. in miles p.h'r.	Spring	6.89	12.62	8.30	6.36	8.90	8.00	6.87	9.81					
		Summer	4.10	9.72	9.88	6.65	7.15	5.80	4.26	4.55					
		Autumn	5.96	12.10	7.01	5.56	6.95	8.03	5.61	7.81					
		Winter	5.01	9.17	4.66	5.19	8.20	6.39	5.84	8.47					
132. Aggregate number of observations at all stations.	Surface winds.	Spring	670	978	709	880½	1441	1208½	1286	1232	679	S. 55 18 W.	.13		
		Summer	614	773½	665½	1003	1693½	1181½	1045½	642½	575	S. 14 17 W.	.20½		
		Autumn	1027½	1315	648	623	528	484½	621½	876½	726	N. 19 0 E.	.20		
		Winter	787	944	518	466	771½	820½	1131½	1496½	775	N. 56 26 W.	.19½		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 84 43 W.	.06½		
	Motion of clouds.	Spring	73	147	33	104	119	290	448	374	...	N. 86 27 W.	.45		
		Summer	114	176	108	139	157	286	499	408	...	N. 83 59 W.	.40		
		Autumn	44	154	48	114	75	195	191	165	...	S 83 26 W.	.21½		
		Winter	51	76	29	84	102	328	451	249	...	S. 80 53 W.	.53		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 88 21 W.	.38		
	The two combined.	Spring	743	1125	742	984½	1560	1498½	1734	1606	679	S. 69 17 W.	.17	S. 34° W.	.08
		Summer	728	949½	773½	1142	1850½	1467½	1544½	1050½	575	S. 34 37 W.	.19	S. 2 E.	.16
		Autumn	1071½	1469	696	737	603	679½	812½	1041½	726	N. 10 24 E.	.16	N. 43 E.	.21
		Winter	838	1020	547	553	873½	1148½	1582½	1745½	775	N. 69 59 W.	.23	N. 54 W.	.13
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 2 W.	.11		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.60	6.43	8.13	7.10	7.56
Velocity in mean direction on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.09	2.16	1.79	1.31	.44
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	.57	2.31	2.55	1.49	.14
Excess of the latter over the former	—.52	+.15	+.76	+.18	—.30

[2] Computed from the resultants for the seasons.

(Nos. 133 and 134.) **Northeastern Florida.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Alligator,	Edward R. Jones,	4	2	1857 to 1860 inclusive, 1866, 1868 and 1869.
Fernandina,	Henry M. Corey,	0	6	1867.
Jacksonville,	A. S. Baldwin,	9	2	1854 to 1858, 1860 and 1866 to 1869, all inclusive.
Lake City,	Rev. W. W. Keep and G. M. Fisher,	0	4	1868.

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
133. Surface winds at Smithsonian Stations in the years 1854, 1855, 1856 and 1857.[1]	No. of observat'ns.	Spring	49	307	58	143	78	291	80	185	...	N. 73° 26′ W.	.034		
		Summer	19	264	64	264	83	392	50	66	...	S. 12 10 E.	.237		
		Autumn	98	414	68	94	53	163	32	226	...	N. 20 50 E.	.282		
		Winter	77	293	21	63	59	221	54	283	...	N. 31 31 W.	.238		
		The year[2]	...		...	...	...	...	...	...	...	N. 1 42 W.	.061		
	No. of miles.	Spring	300	1934	285	634	331	2067	465	827	...	N. 88 24 W.	.059		
		Summer	79	1321	367	1127	408	2184	211	300	...	S. 4 54 E.	.241		
		Autumn	630	2345	463	306	302	739	132	1045	...	N. 25 25 E.	.215		
		Winter	292	1492	80	210	233	1689	335	1026	...	N. 62 55 W.	.198		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 19 20 W.	.046		
	M'n vel. in miles p.h'r.	Spring	6.12	6.30	4.91	4.43	4.24	7.10	5.81	4.47					
		Summer	4.16	5.00	5.73	4.23	4.92	5.57	4.2[illegible]	4.55					
		Autumn	6.43	5.66	6.81	3.26	5.70	4.53	4.12	4.62					
		Winter	3.79	5.09	3.81	3.33	3.95	7.64	6.20	3.63					
134. Aggregate number of observations at all stations.	Surface wind.	Spring	134	804	208	594	183	1412	337	696	346	S. 62 15 W.	.18½		
		Summer	41	637	180	741	179	1274	158	191	255	S. 2 19 W.	.27		
		Autumn	157	1018	203	291	93	496	96	685	203	N. 15 31 E.	.23		
		Winter	177	803	75	242	110	721	234	951	187	N. 38 7 W.	.28		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 41 21 W.	.11		
	Motion of clouds.	Spring	59	323	69	221	75	1000	345	176	...	S. 53 56 W.	.39½		
		Summer	74	407	172	297	74	869	210	126	...	S. 28 34 W.	.23		
		Autumn	50	489	153	180	78	508	144	179	...	S. 5 3 W.	.02½		
		Winter	63	278	44	153	63	754	344	166	...	S. 63 7 W.	.39		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 50 51 W.	.25		
	2 preceding combined.	Spring	193	1127	277	815	258	2412	682	872	346	S. 55 24 W.	.23½	S. 43° W.	.12
		Summer	115	1044	352	1038	253	2143	368	317	255	S. 11 15 W.	.24½	S. 18 E.	.20
		Autumn	207	1507	356	471	171	1004	240	864	203	N. 16 9 E.	.14	N. 39½ E.	.23½
		Winter	240	1081	119	395	173	1475	578	1117	187	N. 76 32 W.	.24	N. 51 W.	.16
		The year[2]	...	...	...	...	...	...	...	...	...	S. 66 47 W.	.12		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	5.75	4.99	5.19	5.00	5.23
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	.20	1.18	1.46	1.19	.32
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	.34	1.20	1.84	.99	.24
Excess of the latter over the former	+.14	+.02	+.38	—.20	—.08

[2] Computed from the resultants for the seasons.

(Nos. 135 to 138.) **South Carolina,** latitude 34° to 35°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Abbeville,	Parker,	2	0	1838 and 1839.
Barrattsville,	Dr. John P. Barratt,	1	0	1850.
Camden,	Holbrook and others,[1]	5	4	1838, 1854 to 1857 inclusive, and 1869.
Evergreen,	E. S. Earle,	1	2	1868 and 1869.
Gowdysville,	Chas. Petty,	1	0	1866, 1867 and 1869.
Fort Hill,	R. A. Springs, Jr.,	0	1	1869.
Wilkinsville,	Chas. Petty,	2	2	1866 to 1869 inclusive.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
135. Abbeville.	The year	21	166	83	61	44	94	196	49	...	N. 70° 5′ W.	.08		
136. Camden.	The year	4	97	4	26	0	135	27	65	...	N. 83 32 W.	.22		
137. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2] No. of observations.	Spring	75	158	70	87	60	223	152	171	...	N. 81 23 W.	.185	S. 65° W.	.02
	Summer	33	162	50	111	123	346	120	60	...	S. 32 38 W.	.280	S. 2 E.	.27
	Autumn	61	281	43	69	50	200	86	190	...	N. 24 52 W.	.156	N. 43 E.	.14
	Winter	119	201	8	59	25	200	135	225	...	N. 48 58 W.	.322	N. 24 W.	.19
	The year[3]	...	...	...	...	...	...	...	...	...	N. 77 22 W.	.169		
No. of miles.	Spring	816	2050	592	756	487	2271	2187	1907	...	N. 68 58 W.	.241	S. 55 W.	.05
	Summer	228	1775	329	693	825	3020	1261	608	...	S. 48 44 W.	.247	S. 1 E.	.27
	Autumn	488	3251	268	373	220	1585	857	1599	...	N. 6 51 W.	.242	N. 50 E.	.20
	Winter	1092	1956	36	428	309	1914	1822	2547	...	N. 54 37 W.	.382	N. 47 W.	.16
	The year[3]	...	...	...	...	...	...	...	...	...	N. 57 21 W.	.232		
M'n vel. in miles p. h'r.	Spring	10.88	12.97	8.46	8.69	8.12	10.18	14.39	11.15					
	Summer	6.91	11.96	6.58	6.24	6.71	8.73	10.51	10.13					
	Autumn	8.00	11.57	6.23	5.41	4.40	7.92	9.97	8.42					
	Winter	9.18	9.73	4.50	7.25	12.36	9.57	13.50	11.32					
138. Aggregate number of observations at all stations. Surface winds.	Spring	217	380	146	133	110	552	453	442	263	N. 72 31 W.	.25		
	Summer	99	334	110	171	194	547	422	211	394	S. 66 7 W.	.22		
	Autumn	281	550	106	143	100	372	230	456	507	N. 22 34 W.	.21		
	Winter	310	458	66	108	49	442	364	507	239	N. 45 44 W.	.31		
	The year[3]	...	...	...	...	...	...	...	...	...	N. 61 47 W.	.21		
Motion of clouds.	Spring	117	84	29	33	45	245	461	262	...	N. 80 22 W.	.56	West	.04
	Summer	123	130	57	67	31	281	483	247	...	N. 80 20 W.	.47	S. 74 E.	.05
	Autumn	114	116	36	67	48	257	321	269	...	N. 78 19 W.	.44	S. 87 E.	.08
	Winter	121	74	9	33	19	266	453	272	...	N. 79 46 W.	.61	N. 81 W.	.09
	The year[3]	...	...	...	...	...	...	...	...	...	N. 79 46 W.	.52		
2 preceding combined.	Spring	334	464	175	166	155	797	914	704	263	N. 76 33 W.	.35	S. 68 W.	.05
	Summer	222	464	167	238	225	828	905	458	394	S. 84 48 W.	.30	S. 1 W.	.13
	Autumn	395	666	142	210	148	629	551	725	507	N. 49 32 W.	.25	N. 64 E.	.11½
	Winter	431	532	75	141	68	708	817	779	239	N. 62 22 W.	.39	N. 32½ W.	.10½
	The year	1382	2126	559	755	596	2962	3187	2666	1403	N. 71 19 W.	.31		

[1] J. A. Young, M.D., and T. Carpenter.

[2] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	11.11	8.69	8.82	10.40	9.75
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.06	2.43	1.38	3.35	1.65
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.68	2.15	2.14	3.98	2.26
Excess of the latter over the former	+.62	—.28	+.76	+.63	+.61

[3] Computed from the resultants for the seasons.

(Nos. 139 to 141.) **South Carolina,** latitude 33° to 34°.

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Aiken,	H. W. Ravenel and Rev. J. H. Cornish,	4	10	1859 to 1861 and 1867 to 1869, both inclusive.
All Saints,	Alexander Glennie,	6	6	1854 to 1861 inclusive.
Columbia,	Col. W. Wallace and others,[1]	2	5	1852, 1854, 1856 and 1858.
Georgetown,	Rev. Alex. Glennie,	6	6	1854 to 1861 inclusive.
Nightingale Hall,	....	1	0	1849.
Orangeburg,	Thos. A. Elliott and J. T. Zealy,	0	11	1850.
Richmond Hill,	....	0	1	1854.
St. John's,	H. W. and T. P. Ravenel,	4	4	1854, 1856, 1858, 1859 and 1861.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
139. Nightingale Hall.	The year	12	32	47	12	27	29	40	24	...	S. 14° 59′ E.	.01		
140. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[2] No. of observations.	Spring	73	96	56	79	139	253	84	48	...	S. 30 29 W.	.279	S. 4° W.	.15
	Summer	77	95	95	114	155	165	176	45	...	S. 24 52 W.	.213	S. 22 E.	.11
	Autumn	178	187	69	82	112	110	119	138	...	N. 12 3 W.	.164	N. 21 E.	.27
	Winter	141	81	47	50	113	263	125	78	...	S. 70 21 W.	.265	N. 88 W.	.12
	The year[3]	...	...	...	...	...	...	...	...	...	S. 54 56 W.	.157		
No. of miles.	Spring	545	1479	790	738	1312	2230	799	631	...	S. 18 41 W.	.170	S. 7 E.	.08
	Summer	338	1208	715	1396	2029	1329	1210	237	...	S. 5 16 E.	.307	S. 23 E.	.24
	Autumn	1405	2616	531	702	859	791	928	1120	...	N. 15 40 E.	.247	N. 22 E.	.35
	Winter	872	801	415	339	779	2473	1228	711	...	S. 69 54 W.	.312	S. 85 W.	.23
	The year[3]	...	...	...	...	...	...	...	...	...	S. 34 6 W.	.107		
M'n vel. in miles p. h'r.	Spring	7.47	15.41	14.11	9.34	9.44	8.81	9.51	13.15	...				
	Summer	4.39	12.72	7.53	12.25	13.09	8.05	6.87	5.27	...				
	Autumn	7.89	13.99	7.70	8.56	7.67	7.19	7.80	8.12	...				
	Winter	6.18	9.89	8.83	6.78	6.89	9.40	9.82	9.12	...				
141. Aggregate number of observations at all stations. Surface winds.	Spring	319	558	437	471	528	1225	607	433	156	S. 40 59 W.	.20	S. 35 W.	.10½
	Summer	260	463	452	668	762	915	523	281	171	S. 9 32 W.	.25	S. 9 E.	.18
	Autumn	569	752	543	339	365	510	476	504	91	N. 13 58 E.	.12	N. 28 E.	.21
	Winter	509	701	446	313	372	1041	723	551	114	N. 84 36 W.	.14½	N. 43 W.	.11
	The year[3]	...	...	...	...	...	...	...	...	...	S. 46 6 W.	.09½		
Motion of clouds.	Spring	82	105	57	45	87	398	526	155	...	S. 79 54 W.	.52½	S. 83 W.	.08
	Summer	105	156	96	89	139	298	582	105	...	S. 78 22 W.	.39	N. 89 E.	.06
	Autumn	115	171	100	47	74	272	374	90	...	West	.30	N. 60 E.	.16
	Winter	99	75	57	30	77	508	462	133	...	S. 74 55 W.	.56½	S. 59 W.	.13
	The year[3]	...	...	...	...	...	...	...	...	...	S. 78 48 W.	.44½		
2 preceding combined.	Spring	401	663	494	516	615	1623	1133	588	156	S. 58 25 W.	.26	S. 42½ W.	.09½
	Summer	365	619	548	757	901	1213	1105	386	171	S. 30 24 W.	.23	S. 16 E.	.13½
	Autumn	684	923	643	386	439	782	850	594	91	N. 27 21 W.	.10	N. 35 E.	.19
	Winter	608	776	503	343	449	1549	1185	684	114	S. 84 19 W.	.24	N. 63 W.	.09½
	The year[3]	...	...	...	...	...	...	...	...	...	S. 66 32 W.	.17		

[1] F. H. Harleston, Prof. J. B. White, Capt. C. C. Tew, E. H. Barton, M.D., and Supt. Arsenal Academy.

[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	10.29	9.28	9.00	8.48	9.26
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.87	1.98	1.48	2.25	1.45
True velocity in mean direction, giving to the winds from every point of the compass each their own average velocity, as shown in the table above	1.75	2.85	2.22	2.65	.99
Excess of the latter over the former	—1.12	+.87	+.76	+.40	—.46

[3] Computed from the resultants for the seasons.

(Nos. 142 to 145.) **South Carolina,** latitude 32° to 33°.

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Beaufort,	Dr. M. M. Marsh & Mrs. Marsh,	1	7	1863, 1864 and 1865.
Charleston,	Ryan and others,[1]	16	0	1831 to 1834 inclusive, 1837, 1841, 1847, 1856, [1857, 1858 and 1860.
Charleston Arsenal	Post Surgeon,	0	4	1846.
Edisto Island,	E. N. Fuller, M.D.,	0	11	1856 and 1857.
Fort Moultrie,	Post Surgeon, [others,[2]	26	4	1823, 1824, 1831 to 1835, and 1840 to 1859, [both inclusive.
Hilton Head,	Maj. J. W. Abert, U. S. Eng., and	1	5	1864 and 1865.
Mount Pleasant,	E. N. Fuller, M.D.,	0	1	1857.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
142. Charleston.[3]	The year	708	1097	622	770	909	1166	374	678	...	S. 40° 0′ E.	.06½		
143. Fort Moultrie.	Spring	542	964	704	723	945	1199	836	615	...	S. 18 58′ W.	.10½		
	Summer	507	753	791	882	1410	1225	798	293	...	S. 1 17 E.	.24½		
	Autumn	1306	1527	935	534	664	720	749	714	...	N. 25 10 E.	.21		
	Winter	1075	1293	553	386	644	1038	1122	958	...	N. 38 15 W.	.18		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 79 19 W.	.01½		
144. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[4] No. of observations.	Spring	33	70	16	34	33	45	32	68	...	N. 28 11 W.	.135		
	Summer	8	8	17	16	20	40	6	15	...	S. 17 10 W.	.259		
	Autumn	57	66	20	40	20	28	11	41	...	N. 28 34 E.	.250		
	Winter	22	53	10	2	9	38	26	59	...	N. 35 34 W.	.334		
	The year[5]	...	...	...	...	...	...	...	...	..	N. 30 36 W.	.105		
No. of miles.	Spring	237	854	142	270	269	410	319	648	...	N. 13 21 W.	.169		
	Summer	16	74	247	187	152	452	24	36	...	S. 6 59 E.	.416		
	Autumn	228	594	108	198	135	211	66	275	...	N. 31 42 E.	.259		
	Winter	127	401	62	4	75	414	323	613	...	N. 55 58 W.	.396		
	The year[5]	...	...	...	...	...	...	...	...	...	N. 54 45 W.	.074		
M'n vel. in miles p. h'r.	Spring	7.18	12.20	8.87	7.94	8.15	9.11	9.97	9.53					
	Summer	2.00	9.25	14.53	11.69	7.60	11.30	4.00	2.40					
	Autumn	4.00	9.00	5.40	4.95	6.75	7.54	6.00	6.71					
	Winter	5.77	7.57	6.20	2.00	8.33	10.89	12.42	10.39					
145. Aggregate number of observations at all stations. Surface winds.	Spring	678	1403	943	1076	1163	1906	1044	970	45	S. 22 38 W.	.11		
	Summer	544	1141	996	1360	1674	2168	906	480	43	S. 0 19 W.	.27		
	Autumn	1518	2436	1237	922	834	1199	905	1040	27	N. 34 23 E.	.20		
	Winter	1284	2054	782	591	798	1638	1462	1467	39	N. 35 41 W.	.17		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 25 7 W.	.02		
Motion of clouds.	Spring	19	21	7	13	17	67	97	36	...	S. 84 8 W.	.50		
	Summer	5	12	14	15	11	40	83	22	...	S. 77 28 W.	.47½		
	Autumn	6	8	3	5	11	30	36	9	...	S. 70 58 W.	.50		
	Winter	12	8	10	8	10	51	85	26	...	S. 82 27 W.	.56½		
	The year[5]	...	...	...	...	...	...	...	...	...	S. 78 52 W.	.51		
2 preceding combined.	Spring	697	1424	950	1089	1180	1973	1141	1006	45	S. 29 14 W.	.11	S. 26° W.	.09
	Summer	549	1153	1010	1375	1685	2208	989	502	43	S. 2 28 W.	.26½	S. 1 E.	.25
	Autumn	1524	2444	1240	927	845	1229	941	1049	27	N. 33 25 E.	.19	N. 34½ E.	.21½
	Winter	1296	2062	792	599	808	1689	1547	1493	39	N. 39 4 W.	.17	N. 31 W.	.17½
	The year[5]	...	...	...	...	...	...	...	...	...	S. 55 22 W.	.02		

[1] Prof. L. R. Gibbes, Dr. Joseph Johnson, J. L. Dawson, M.D., and G. S. Pelzer, M.D.
[2] Capt. C. R. Suter.
[3] Number of days 2191.
[4] From the preceding tables we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	9.51	8.61	6.44	9.09	8.40
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.28	2.23	1.60	3.04	.88
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.61	3.59	1.67	3.60	.62
Excess of the latter over the former	+.33	+1.36	+.07	+.56	—.26

[5] Computed from the resultants for the seasons.

(Nos. 146 to 149.) **North Carolina,** south of latitude 35°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Beaufort,[1]	Post Surgeon,	4	8	1834, 1835, 1843, 1844 and 1849.
Fort Johnston,	Post Surgeon,	12	7	1822 to 1826, 1831 to 1835 and 1843 to 1845, all
Kenansville,	Prof. N. B. Webster,	1	8	1868 and 1869. [inclusive.

Place of observation.	Time of the year	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
146. Kenansville.	Spring	21	72	34	49	32	205	72	67	0	S. 57° 29′ W.	.31		
	Summer	6	17	9	23	37	43	27	20	1	S. 33 38 W.	.34		
	Autumn	54	87	54	50	21	120	63	67	1	N. 63 57 W.	.09½		
	Winter	29	62	54	34	26	87	62	64	0	N. 82 4 W.	.11½		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 58 55 W.	.19		
147. Fort Johnston.	Spring	201	322	128	96	397	491	143	82	...	S. 20 57 W.	.19		
	Summer	122	223	162	100	352	564	134	36	...	S. 18 1 W.	.32		
	Autumn	218	331	121	76	228	252	119	158	...	N. 0 4 W.	.07		
	Winter	278	327	134	51	290	286	230	257	...	N. 7 27 W.	.11		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 41 17 W.	.11		
148. Beaufort.	Spring	136	207	103	78	228	303	88	128	...	S. 35 19 W.	.12		
	Summer	91	207	91	94	171	436	130	62	...	S. 33 59 W.	.25		
	Autumn	186	146	49	42	67	123	44	106	...	N. 7 34 W.	.24		
	Winter	207	80	39	71	62	189	90	218	...	N. 53 29 W.	.30		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 77 15 W.	.13		
149. Aggregate.	Spring	358	601	265	223	657	999	303	277	0	S. 33 24 W.	.18	S. ½° E.	.10
	Summer	219	447	262	217	560	1043	291	118	1	S. 24 34 W.	.29	S. 5 W.	.21½
	Autumn	458	564	224	168	316	495	226	331	1	N. 12 37 W.	.11	N. 26½ E.	.17½
	Winter	514	469	227	156	378	562	382	539	0	N. 55 6 W.	.18½	N. 20½ W.	.17
	The year[2]	...	...	...	...	...	...	...	...	...	S. 63 44 W.	.11		

[1] Fort Macon.

[2] Computed from the resultants for the seasons.

(Nos. 150 to 152.) **Bermuda Islands.**

Observed as follows, viz. :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Centre Signal Station, Dockyard (Hamilton?),	Royal Engineers and R. Hartshorne,	17	6	1838 to 1854 inclusive, 1858 and 1859.
Ireland Isle,	....	0	4	1839.
St. George's,	James Crawford,	1	10	1857, 1858 and 1859.
Shelby Bay,	Jas. B. Arnold,	0	1	December, 1857.

(Nos. 150 to 152.) **Bermuda.**—*Continued.*

Place of observation.	Time of the year.	North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E.	E. by N.	East.	E. by S.	E. S. E.	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.
150. Centre Signal Station.[1]	January	409	0	63	48	295	20½	24	0	207	0	50	0	20	9½	160	0	239½	0
	February	273	19	101	41	178	0	30	0	138	0	132	0	94	0	53	13	235	48
	March	223	60	21	48	108½	0	48	0	51½	10	53	0	36	0	87½	0	198½	39
	April	173¾	59	156	24	47	0	36	0	129½	64	97½	12	24	48	109	0	378¼	72
	May	198	36	61	0	111	0	12	0	210	0	0	0	192	40	66	40	293	72½
	June	101	0	0	0	58	3	0	0	55	24	48	0	216	24	60	36	365	96
	July	112	0	0	0	96	0	0	0	227	0	11	0	310	0	85	24	368	14
	August	93½	12	0	24	162	0	3	0	188	0	84	24	408	24	92	1	353	36
	September	232	33	56	19	336	24	12	12	170	12	24	12	336	36	66	18	234	6
	October	235	24	51	0	173	0	0	0	151	0	0	0	155	0	24	0	106	3
	November	179	12	24	24	157	18	0	24	64	0	0	0	55	0	0	0	152	24
	December	240	24	31½	0	48	0	0	0	24	0	24	0	24	0	24	0	227	0
	Spring	594¾	155	238	72	266½	0	96	0	391	74	150	12	252	88	262½	40	869¾	183½
	Summer	306½	12	0	24	316	3	3	0	470	24	143	24	934	48	237	61	1086	146
	Autumn	636	69	131	43	666	42	12	36	385	12	24	12	546	36	90	18	492	33
	Winter	922	43	195½	89	521	20½	54	0	369	0	206	0	138	9½	237	13	701½	48
	The year	2459¼	279	564½	228	1769½	65½	165	36	1615	110	523½	48	1870	181½	826½	132	3149¼	410½

Place of observation.	Time of the year.	S. S. W.	S. W. by S.	S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N. W.	N. W. by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Direction of resultant.	Ratio of resultant to sum of winds.
150. Centre Signal Station.[1]	January	89½	0	497	42	67½	6	159	0	9	0	344	51	101½	64	N. 52° 17′ W.	.15
	February	202	102	258½	0	135	0	200	54	123½	0	180½	66	30½	5	S. 72 16 W.	.16½
	March	147	24	325¾	47	403	41	229¾	24	157	0	313½	48	124	108	S. 82 29 W.	.38
	April	70	107	287½	50	61	35	247½	51	96¾	0	188¼	16	56	16	S. 51 39 W.	.23
	May	131	162	308½	88½	170	0	198	36	55	121	40	37½	0	45	S. 38 22 W.	.30
	June	87	120	436½	222½	120	108	211	34	24	21	48	2	24	24	S. 34 20 W.	.55
	July	55½	48	468	72	24	12	156½	24	26	0	39	12	24	0	S. 9 43 W.	.43
	August	176	24	181½	0	0	0	51	36	24	0	41	12	14	0	S. 25 14 E.	.44
	September	165	48	399	0	48	0	132	36	24	0	54	0	30	0	S. 20 54 E.	.16
	October	24	0	72	0	0	0	20	0	0	0	57	24	0	0	N. 59 49 E.	.30
	November	24	0	182	0	0	6	6	0	24	0	192	2	63	16	N. 17 49 W.	.18
	December	0	3	310	19	0	27	172	0	28	0	107	0	103½	0	S. 89 29 W.	.29
	Spring	348	293	921¾	185½	634	76	675¼	111	308¾	121	541¾	101½	180	169		
	Summer	318½	192	1086	294½	144	120	418½	94	74	21	128	26	62	24		
	Autumn	213	48	653	0	48	6	158	36	48	0	303	26	93	16		
	Winter	291½	105	1065½	61	202½	33	531	54	160½	0	631½	117	235½	69		
	The year	1171	638	3726¼	541	1028½	235	1782¾	295	591¼	142	1604¼	270½	570½	278	S. 45 48 W.	.20

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Mean velocity.	
150(*a*). Centre Signal Stat'ns, observat'ns with a self-registering anemometer.	January	...	...	...	...	...	...	...	...	...	S. 68° 5′ W.	.30	17.79	
	February	...	...	...	...	...	...	...	...	...	S. 58 50 W.	.27	19.74	
	March	...	...	...	...	...	...	...	...	...	S. 61 22 W.	.39	18.85	
	April	...	...	...	...	...	...	...	...	...	N. 80 41 W.	.33	17.88	
	May	...	...	...	...	...	...	...	...	...	S. 5 47 W.	.32	14.81	
	June	...	...	...	...	...	...	...	...	...	S. 15 29 W.	.61½	13.89	
	July	...	...	...	...	...	...	...	...	...	S. 22 46 W.	.65	13.44	
	August	...	...	...	...	...	...	...	...	...	S. 18 58 W.	.41	13.15	
	September	...	...	...	...	...	...	...	...	...	S. 62 19 E.	.32	13.99	
	October	...	...	...	...	...	...	...	...	...	S. 72 35 E.	.36½	16.72	
	November	...	...	...	...	...	...	...	...	...	N. 67 40 W.	.14	20.08	
	December	...	...	...	...	...	...	...	...	...	N. 56 51 W.	.22½	19.68	
													Monsoon influences. Direction.	Force.
151. H. M. Dockyard.	Spring	29	33	40	38	29	70	40	65	22	S. 81 7 W.	.12½		
	Summer	8	24	21	62	47	71	41	49	15	S. 28 24 W.	.27½		
	Autumn	25	53	59	34	23	36	19	30	10	N. 78 28 E.	.19		
	Winter	45	44	11	32	20	63	43	85	16	N. 59 24 W.	.27		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 74 10 W.	.07½		
152. Aggregate.	Spring	725¾	1044½	484	1089	1037¾	3096¾	814¼	1841	26	S. 61 58 W.	.26	West.	.11½
	Summer	354½	507	552	1776	1338	2918	577½	591	36	S. 15 1 W.	.40	S. 2° E.	.26
	Autumn	796	1427	561	1048	654	1351	296	828	36	N. 85 9 E.	.07	N. 55 E.	.22½
	Winter	1093	1195	434	751½	833½	2271½	674	1613½	16	N. 86 8 W.	.18½	N. 31 W.	.15½
	The year[2]	...	...	...	...	...	...	...		...	S. 42 21 W.	16½		

[1] From hourly observations during parts of the years 1838 to 1843 inclusive.
[3] Computed from the resultants for the seasons.

(Nos. 153 to 167.) **Atlantic Ocean and Madeira Islands.**

Observed as follows, viz.:—

At *Funchal, Madeira*, during the years 1826, 1827, and 1828; also six years, 1865 to 1870.

At *sea*, for an aggregate period of nearly eleven years and nine months, the observations being collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
153. Long. 70° to 75° W.	Spring	38	71	17	35	29	43	36	71	44	84	30	71	24	51	34	62	25	S. 43° 20′ W.	.76	S. 42° W.	.65	255
	Summer	9	19	3	12	5	24	28	38	30	69	28	26	2	8	4	16	6	S. 2 49 W.	.41	S. 11 E.	.03	109
	Autumn	19	44	16	34	12	20	11	13	13	27	17	28	9	18	24	43	20	N. 4 19 W.	.16	N. 17 E.	.24	123
	Winter	19	30	11	24	8	27	12	28	11	58	27	39	20	86	27	40	13	N. 85 27 W.	.24	N. 61 W.	.18	160
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 4 W.	.11	....	...	647
154. Long. 65° to 70° W.	Spring	40	88	41	71	20	89	46	112	45	128	76	76	55	115	46	65	48	S. 40 1 W.	.11	N. 45 E.	.02	387
	Summer	14	18	19	27	14	40	28	41	37	111	41	54	15	19	7	33	18	S. 13 33 W.	.31	S. 5 E.	.20	179
	Autumn	20	36	29	30	8	22	11	26	10	45	14	23	7	26	17	32	25	N. 9 30 E.	.07	N. 30 E.	.20	127
	Winter	19	23	9	10	10	33	11	37	30	33	20	51	38	52	23	24	12	S. 67 56 W.	.24	N. 82½ W.	.13	145
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 40 50 W.	.14	....	...	838
155. Long. 60° to 65° W.	Spring	8	19	8	26	2	34	5	29	7	23	19	43	19	39	18	33	11	S. 87 49 W.	.17	N. 33 W.	.04	114
	Summer	3	14	10	17	14	21	16	16	15	34	13	33	6	9	2	12	17	S. 6 0 E.	.23	S. 42 E.	.24	84
	Autumn	6	14	15	28	7	9	2	13	2	7	2	22	4	19	6	10	18	N. 20 10 E.	.15	N. 41 E.	.16	61
	Winter	4	4	1	8	1	8	2	3	9	22	12	24	34	37	6	6	13	S. 78 35 W.	.49	S. 11 W.	.34	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 44 W.	.15	....	...	324
156. Long. 55° to 60° W.	Spring	0	11	9	6	2	10	5	3	1	17	5	6	6	9	0	4	1	S. 5 12 E.	.07	N. 88 E.	.01	32
	Summer	8	23	4	18	8	9	5	4	10	23	7	8	4	2	1	4	16	S. 74 9 E.	.14	N. 77 E.	.14	51
	Autumn	9	12	9	19	12	40	22	13	3	15	6	16	8	24	9	7	14	S. 67 7 E.	.15	N. 85 E.	.14	79
	Winter	0	8	4	4	3	8	3	5	5	12	5	25	13	13	3	9	3	S. 73 2 W.	.32	S. 85 W.	.30½	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 0 32 W.	.07	....	...	203
157. Long. 50° to 55° W.	Spring	5	20	16	12	10	11	6	12	9	19	2	12	5	8	5	10	1	N. 80 57 E.	.12	N. 56½ E.	.16	54
	Summer	6	14	7	11	8	8	9	20	10	30	19	17	6	10	6	6	0	S. 15 56 W.	.24	S. 17½ W.	.17	62
	Autumn	6	10	15	22	20	14	15	28	13	15	5	15	15	15	5	15	9	S. 53 27 E.	.14	S. 83½ E.	.13	79
	Winter	3	12	2	5	2	6	0	10	4	15	5	8	4	22	7	13	4	N. 76 24 W.	.24	N. 60½ W.	.25	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 13 31 W.	.07	....	...	236
158. Long. 45° to 50° W.	Spring	3	15	12	23	8	13	15	26	25	22	10	16	12	12	4	11	6	S. 18 38 E.	.21	S. 26 W.	.09	78
	Summer	7	5	8	18	7	36	16	34	18	33	16	15	5	9	6	20	28	S. 19 46 E.	.27	S. 7 W.	.13	94
	Autumn	8	9	10	19	23	28	22	46	14	26	6	24	16	9	2	6	6	S. 39 1 E.	.30	S. 35 E.	.14	91
	Winter	12	20	13	14	5	6	6	6	3	7	2	5	6	7	6	19	12	N. 16 18 E.	.23	N. 7 W.	.34½	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 50 E.	.16	....	...	316
159. Long. 45° to 75° W.	January	18	39	15	36	15	28	20	36	16	64	24	48	34	65	26	35	21	S. 80 10 W.	.16	N. 56 27′ W.	.12	180
	February	13	34	12	12	7	21	4	30	32	68	19	44	33	74	22	39	13	S. 79 16 W.	.30	N. 80 59 W.	.24	159
	March	28	56	25	40	16	49	43	57	28	97	52	97	42	111	45	59	23	S. 73 19 W.	.21	N. 76 54 W.	.15	289
	April	34	88	43	48	29	62	30	104	53	125	48	68	57	89	39	76	37	S. 49 3 W.	.11	N. 49 44 W.	.03	343
	May	32	80	35	85	26	89	40	92	50	71	42	59	22	34	23	50	32	S. 62 43 E.	.14	N. 80 48 E.	.18	287
	June	14	19	14	21	11	21	26	54	47	69	32	56	17	26	13	29	39	S. 22 27 W.	.29	S. 16 58 W.	.18	169
	July	11	31	24	45	25	78	41	49	49	154	50	44	10	20	9	24	19	S. 8 41 E.	.35	S. 23 38 E.	.28	228
	August	22	43	13	37	20	38	35	50	24	77	42	53	11	11	4	38	27	S. 7 11 E.	.19	S. 40 38 E.	.13	182
	September	17	46	29	43	14	37	31	50	6	41	15	28	9	19	9	34	43	S. 49 8 E.	.19	S. 81 23 E.	.20	157
	October	25	49	45	57	49	59	34	45	30	43	13	28	19	43	23	33	24	N. 85 7 E.	.18	N. 65 17 E.	.26	206
	November	26	30	20	52	19	37	18	44	19	51	22	72	31	49	31	46	25	S. 84 32 W.	.10	N. 63 46 W.	.09	197
	December	26	24	13	17	7	39	10	23	14	25	28	60	48	78	24	37	23	N. 81 21 W.	.29	N. 59 4 W.	.27	165
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 31 35 W.	.11	....	...	2562
160. Long. 40° to 45° W.	Spring	9	10	15	25	17	16	15	39	38	34	12	15	1	14	2	17	22	S. 26 30 E.	.28	S. 46½ W.	.06	100
	Summer	3	21	10	34	29	26	12	40	23	36	10	24	9	17	14	16	32	S. 36 7 E.	.19	N. 46½ W.	.08	119
	Autumn	5	23	13	25	31	43	27	42	9	19	8	19	8	6	12	16	9	S. 63 55 E.	.31	N. 55½ E.	.13	105
	Winter	2	14	13	12	8	17	13	37	13	15	12	17	6	5	3	3	6	S. 27 12 E.	.32	S. 15 W.	.08	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 6 E.	.27	....	...	389
161. Long. 35° to 40° W.	Spring	13	14	6	21	6	8	15	38	26	25	11	25	5	6	4	11	15	S. 2 27 E.	.23	S. 69 W.	.09	83
	Summer	11	22	15	64	23	31	15	28	33	32	14	28	11	16	10	16	16	S. 59 56 E.	.19	N. 34½ E.	.12	128
	Autumn	6	20	23	29	18	15	12	27	18	27	22	22	8	15	10	15	27	S. 36 37 E.	.10	N. 18½ W.	.12	108
	Winter	5	5	9	11	9	19	27	37	23	14	15	8	12	8	1	6	1	S. 21 57 E.	.41	S. 16 E.	.19	70
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 26 41 E.	.22	....	...	389
162. Long. 30° to 35° W.	Spring	4	3	3	9	8	18	6	19	5	19	10	11	4	4	2	4	0	S. 16 7 E.	.35	S. 43½ W.	.14½	43
	Summer	10	19	19	21	17	19	11	26	16	19	12	17	4	10	12	8	10	S. 62 25 E.	.16	N. 23½ W.	.17	83
	Autumn	4	13	5	24	13	23	13	20	13	21	15	18	8	9	7	6	4	S. 27 42 E.	.23	N. 75 W.	.10½	72
	Winter	3	10	4	3	7	10	12	24	29	9	10	5	4	8	7	6	6	S. 9 22 E.	.30	S. 67 W.	.17	52
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 30 E.	.31	....	...	250

[1] Computed from the resultants for the seasons.

(Nos. 163 to 167.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
163. Long. 20° to 30° W.	Spring	9	16	9	6	2	8	3	14	3	10	8	18	2	9	5	5	3	N. 76° 22′ W.	.05	S. 40½° W.	.06	43
	Summer	38	106	28	75	28	32	32	50	23	57	68	55	27	46	26	69	57	N. 19 25 W.	.05	S. 38½ W.	.01½	269
	Autumn	25	50	9	27	8	11	10	16	10	8	23	21	12	20	18	34	31	N. 10 22 W.	.22	N. 11½ W.	.16	111
	Winter	1	11	14	29	10	3	12	8	11	10	18	15	9	7	2	10	4	S. 43 40 W.	.10	S. 25 W.	.14½	58
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 7 22 W.	.06	....	...	481
164. Funchal, 1826 and 1828.	January	5	...	19	...	3	...	8	...	4	...	5	...	16	...	2	...	...	N. 9 43 E.	.11	S. 24 W.	.35	93
	February	7	...	21	...	4	...	1	...	0	...	0	...	18	...	6	...	...	N. 6 3 W.	.45	S. 84 W.	.25	85
	March	13	...	13	...	13	...	4	...	0	...	0	...	11	...	8	...	...	N. 18 28 E.	.43	S. 62½ W.	.05	93
	April	4	...	22	...	9	...	2	...	1	...	3	...	15	...	4	...	...	N. 18 38 E.	.31	S. 31 W.	.19	90
	May	6	...	30	...	4	...	0	...	0	...	2	...	12	...	8	...	...	N. 11 2 E.	.52	N. 47 W.	.10	93
	June	3	...	28	...	7	...	0	...	0	...	0	...	13	...	9	...	...	N. 14 18 E.	.50	N. 54½ W.	.07	90
	July	4	...	41	...	3	...	0	...	0	...	0	...	13	...	1	...	...	N. 28 29 E.	.62	N. 54 E.	.16	93
	August	0	...	58	...	2	...	2	...	0	...	0	...	0	...	0	...	...	N. 48 17 E.	.96	N. 75 E.	.54	93
	September	4	...	19	...	5	...	4	...	0	...	0	...	28	...	0	...	...	N. 24 46 W.	.27	S. 61 W.	.34	90
	October	4	...	28	...	10	...	3	...	0	...	4	...	7	..	6	...	...	N. 37 43 E.	.47	S. 68 E.	.16	93
	November	5	...	26	...	5	...	1	...	0	...	1	...	11	...	11	...	...	N. 8 49 E.	.50	N. 32 W.	.17	90
	December	28	...	20	...	5	...	1	...	0	...	0	...	6	...	2	...	...	N. 30 22 E.	.63	N. 3 E.	.25	93
	Spring	23	...	65	...	26	...	6	...	1	...	5	...	38	...	20	...	...	N. 15 27 E.	.42	S. 56 W.	.06	276
	Summer	7	...	127	...	12	...	2	...	0	...	0	...	26	...	10	...	...	N. 34 24 E.	.68	N. 61½ E.	.25	276
	Autumn	13	...	73	...	20	...	8	...	0	...	5	...	46	...	17	...	...	N. 13 7 E.	.38	S. 46½ W.	.10	273
	Winter	40	...	60	...	12	...	10	...	4	...	5	...	40	...	10	...	...	N. 8 17 E.	.42	S. 77 W.	.10	271
	The year	83	...	325	...	70	...	26	...	5	...	15	...	150	...	57	...	...	N. 23 50 E.	.45	....	...	1096
165. Funchal, 1865 to 1870.	Spring	3	...	6	...	5	...	10	...	9	...	48	...	17	...	2	...	...	S. 41 2 W.	.55			
	Summer	1	...	1	...	1	...	4	...	6	...	79	...	8	...	0	...	...	S. 0 31 W.	.63			
	Autumn	4	...	8	...	6	...	8	...	7	...	48	...	17	...	2	...	...	S. 22 55 W.	.38			
	Winter	6	...	8	...	13	...	14	...	4	...	25	...	26	...	4	...	...	S. 47 58 W.	.25			
	The year	14	...	23	...	25	...	36	...	26	...	200	...	68	...	8	...	...	S. 42 0 W.	.51			
166. At sea, Long. 5° to 20° W.	Spring	21	21	19	6	1	1	3	4	3	6	1	5	6	12	19	15	2	N. 9 5 W.	.49	....	...	48
	Summer	36	72	16	16	2	0	0	1	1	0	0	6	5	16	8	19	1	N. 7 30 E.	.68	....	...	66
	Autumn	14	12	18	10	4	6	2	10	1	16	19	15	10	25	5	8	9	N. 54 26 W.	.19	....	...	57
	Winter	7	27	19	24	10	13	8	8	11	6	2	6	4	10	8	30	8	N. 34 42 E.	.32	....	...	67
167. At sea, Long. 5° to 45° W.	January	10	24	31	38	20	21	29	39	26	30	29	29	11	16	10	37	5	S. 26 8 E.	.12	S. 24 W.	.04	135
	February	3	17	0	4	7	5	7	17	7	10	15	3	8	3	3	2	6	S. 2 47 E.	.25	S. 17½ W.	.18½	39
	March	12	18	6	10	9	18	6	17	19	21	3	8	1	24	8	4	16	S. 27 53 E.	.09½	S. 24½ W.	.02½	67
	April	19	12	10	16	5	17	24	52	38	44	16	29	10	8	10	19	2	S. 1 29 W.	.31	S. 18 W.	.25	110
	May	25	34	36	41	20	16	12	45	18	29	23	37	8	13	14	29	24	N. 88 32 E.	.08	N. 8½ E.	.07½	141
	June	35	48	21	78	29	33	27	51	42	43	26	69	22	44	41	49	44	N. 30 9 W.	.01	N. 42½ W.	.11	233
	July	34	99	36	59	37	30	7	32	13	40	25	31	12	29	17	43	41	N. 32 35 E.	.22½	N. 11 E.	.26½	195
	August	31	93	31	73	33	45	26	62	41	61	53	30	22	32	12	36	31	S. 76 13 E.	.11½	N. 43 E.	.06	237
	September	34	40	29	31	23	23	8	27	12	26	20	33	12	19	22	30	20	N. 14 40 E.	.13	N. 10½ W.	.20	136
	October	18	48	33	55	29	30	14	36	15	33	31	28	23	43	14	30	44	N. 45 21 E.	.08	N. 5 W.	.13	175
	November	2	30	3	29	22	45	42	52	24	43	26	34	11	13	16	19	16	S. 21 58 E.	.29	S. 10½ E.	.20	142
	December	5	26	28	37	17	36	36	58	49	13	13	18	16	19	8	16	14	S. 42 25 E.	.26	S. 41½ E.	.16	136
	The year	226	489	264	471	251	319	238	488	304	393	280	349	156	263	175	314	263	S. 44 27 E.	.10	....	...	1746

[1] Computed from the resultants for the seasons.

(Nos. 168 to 176(*b*).) **Southern Algeria, Tripoli, and Northern Egypt.**

Observed at the following places, viz.:—

Geryville and vicinity, Southern Algeria, by Messrs. Ferronnays, Gauverit and Merés, from October 23, 1856, to February 7, 1857, including the observations made by Dr. Merés during the last half of a journey from Oran to Geryville, extending, say, 100 miles north of the latter place.

Desert of Sahara, lat. 30° to 33° N., long. 0° to 1° W., by Dr. Paul Merés in January and February, 1857.

Gardeia, Tuggurt, and adjacent portions of the desert of Sahara, lat. 32° to 34¼° N., long. 2° to 7° E., by Dr. Paul Merés from March 7th to June 21, 1858.

Ghadamis, Desert of Sahara, by Rohlfs.

(Nos. 168 to 176(*b*).) **Southern Algeria, etc.**—*Continued.*

Biskra, Southern Algeria, in the desert of Sahara, by E. Renou, during the years 1845–6–7–8–51–52 and 53.

City of Tripoli, for an aggregate period of 32 months in the years 1843 to 1846 inclusive, and 1855.

Alexandria, Egypt, during a period of three years, 1858 to 1861.

Cairo, Egypt, by Lefebvre, for 41 days, in February and March, 1839; by Destouches for seven years (date not given), and by Hubbard at Cairo, and on the road to Suez for five days in the year 1857. Also for 5 years, 1857 to 1861, inclusive, by Caneval, J. Franz, Prof. Dr. Keyer, Dr. Lantner Bey, and Prof. Dr. Bilharz.

Ismalia, by A. Gepek, six times a day from June 1, 1866, to May 31, 1868, two years.

Port Said, by Vabre, six times a day, from June 1, 1866, to May 31, 1868, two years.

Rosetta, Egypt, by Hunter, for 71 days in November, 1777, and January and February, 1778.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
168. Geryville, Algeria.	Autumn	9	2	1	3	2	$\frac{1}{2}$	1	0	3	$1\frac{1}{2}$	0	1	4	0	2	6	42	N. 7° 20′ W.	.18	....	...	[illegible]
	Winter	14	0	1	0	0	0	0	0	8	1	6	1	10	1	18	33	45	N. 42 34 W.	.44	....	...	[illegible]
169. Desert of Sahara, lat. 30° to 33° N., long. 0° to 1° W.	Winter	13	2	0	0	0	0	0	0	2	0	0	0	2	1	9	7	20	N. 23 16 W.	$.50\frac{1}{2}$	....	...	30
170. Desert of Sahara, lat. 32° to $34\frac{1}{4}$°N., long. 2° to 7° E.	Spring	22	5	5	3	8	2	5	2	5	2	4	1	5	1	7	2	55	N. 15 34 E.	.17	....	...	86
171. Desert of Sahara, lat. 32° to $34\frac{1}{2}$°N., long. 2° to 7° E.	June	6	0	3	1	15	0	1	0	2	0	9	0	0	0	1	0	25	N. 89 19 E.	$.18\frac{1}{2}$	....	...	21
172. Biskra, Algeria.	January	77	...	10	...	3	...	39	...	13	...	9	...	9	...	150	...	...	....	...	....	...	217
	February	55	...	10	...	6	...	59	...	17	...	3	...	15	...	115	...	...	....	...	....	...	198
	March	61	...	11	...	11	...	54	...	23	...	9	...	19	...	120	...	...	....	...	....	...	217
	April	26	...	6	...	17	...	77	...	20	...	15	...	19	...	120	...	...	....	...	....	...	210
	May	11	...	21	...	11	...	142	...	14	...	15	...	11	...	85	...	...	....	...	....	...	217
	June	16	...	8	...	18	...	131	...	16	...	19	...	20	...	72	...	...	....	...	....	...	210
	July	0	...	13	...	6	...	147	...	31	...	29	...	21	...	63	...	...	....	...	....	...	217
	August	0	...	11	...	6	...	121	...	34	...	39	...	15	...	84	...	...	....	...	....	...	217
	September	18	...	20	...	4	...	95	...	24	...	22	...	18	...	99	...	...	....	...	....	...	210
	October	22	...	28	...	11	...	82	...	14	...	14	...	9	...	130	...	...	....	...	....	...	217
	November	36	...	19	...	6	...	51	...	19	...	8	...	18	...	143	...	...	....	...	....	...	210
	December	30	...	3	...	14	...	56	...	13	...	6		15	...	173	...	...	....	...	....	...	217
	Spring	98	...	38	...	39	...	273	...	57	...	39	...	39	...	325	...	...	N. 25 56 W.	$.09\frac{1}{2}$	N. $79\frac{1}{2}$°E.	.04	644
	Summer	16	...	32	...	30	...	399	...	81	...	87	...	46	...	219	...	...	S. 17 23 E.	$.26\frac{1}{2}$	S. 25 E.	.37	644
	Autumn	76	...	67	...	21	...	228	...	57	...	44	...	45	...	372	...	...	N. 38 39 W.	.19	N. $32\frac{1}{2}$ W.	.08	637
	Winter	162	...	23	...	23	...	154	...	43	...	18	...	39	...	438	...	...	N. 33 24 W.	.43	N. 30 W.	.32	632
	The year	352	...	160	...	113	...	1054	...	238	...	188	...	169	...	1354	...	...	N. 43 14 W.	.12	....	...	2557
172(*a*). Ghadamis.	July, August	10	...	32	...	21	...	14	...	9	...	1	...	3	...	10	...	100	N. 64 49 W.	.23			
173. City of Tripoli.	Spring	109	...	138	...	158	...	140	...	98	...	85	...	88	...	144	...	58	N. 63 53 E.	.12	N. 18 E.	.08	214
	Summer	146	...	245	...	202	...	188	...	56	...	11	...	19	...	72	...	88	N. 67 36 E.	.45	N. 60 E.	.38	246
	Autumn	34	...	61	...	68	...	120	...	74	...	71	...	37	...	29	...	40	S. 51 36 E.	$.26\frac{1}{2}$	S. 41 E.	.19	182
	Winter	35	...	30	...	7	...	48	...	60	...	136	...	114	...	79	...	19	S. 69 3 W.	.41	S. 75 W.	.49	181
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 45 E.	.08	....	...	823
174. Alexandria.	January	2	...	3	...	2	..	2	...	3	...	8	...	6	...	5	...	...	....	...	....	...	93
	February	4	...	2	...	1	...	1	...	1	...	7	...	6	...	6	...	...	....	...	....	...	85
	March	4	...	3	...	2	...	5	...	2	..	4	...	3	...	8	...	...	....	...	....	...	93
	April	3	...	3	...	2	...	3	...	3	...	2	...	4	...	10	...	...	....	...	....	...	90
	May	5	...	3		2	...	3	...	2	...	2	...	3	...	11	...	...	....	...	....	...	93
	June	6	...	1	...	1	...	1	...	2	...	1	...	4	...	14	...	...	....	...	....	...	90
	July	7	...	1	...	1	...	0	...	0	...	0	...	5	...	17	...	...	....	...	....	...	93
	August	7	...	1	...	0	...	1	...	0	...	0	...	3	...	19	...	...	....	...	....	...	93
	September	11	...	2	...	0	...	0	...	0	...	1	...	1	...	15	...	...	....	...	....	...	90
	October	8	...	6	...	0	...	2	...	0	...	1	...	3	...	11	...	...	....	...	....	...	93
	November	8	...	4	...	1	...	2	...	3	...	4	...	3	...	5	...	...	....	...	....	...	90
	December	2	...	1	...	0	...	3	...	2	...	11	...	6	...	6	...	...	....	...	....	...	93
	Spring	12	...	9	...	6	...	11	...	7	...	8	...	10	...	29	...	...	N. 49 0 W.	$.26\frac{1}{2}$	S. $43\frac{1}{2}$ E.	.19	276
	Summer	20	...	3	...	2	...	2	...	2	...	1	...	12	...	50	...	...	N. 38 31 W.	.75	N. $26\frac{1}{2}$ W.	.31	276
	Autumn	27	...	12	...	1	...	4	...	3	...	6	...	7	...	31	...	...	N. 23 46 W.	.57	N. $24\frac{1}{2}$ E.	.23	273
	Winter	8	...	6	...	3	...	6	...	6	...	26	...	18	...	17	...	...	S. 83 16 W.	.41	S. $13\frac{1}{2}$ W.	.37	271
	The year	67	...	30	...	12	...	23	...	18	...	41	...	47	...	127	...	...	N. 45 24 W.	.45	....	...	1096

(Nos. 175 to 176(*b*).) **Southern Algeria, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
175. Cairo.	Spring	11	7	7	0	1	0	0	14	...	N. 44° 3′ E.	.62	....	...	20
	Summer	11	14	0	0	5	0	0	25	...	N. 13 3 W.	.63	....	...	26
	The year	157	55	15	3	14	28	48	6	...	N. 12 54 W.	.59	....	...	2557
175(*a*). Cairo, 1857–61.	January	4	2	1	1	4	3	5	2	0					
	February	5	2	0	1	3	2	3	3	10					
	March	7	2	1	0	1	1	3	4	12					
	April	10	3	1	1	1	1	2	4	7					
	May	10	3	1	0	1	1	1	9	5					
	June	9	2	0	0	0	0	2	13	4					
	July	10	2	0	0	0	0	2	14	3					
	August	10	1	0	0	0	0	2	13	5					
	September	10	2	0	0	0	0	0	14	4					
	October	10	3	0	0	0	0	1	11	6					
	November	8	1	0	0	2	1	1	7	10					
	December	4	1	0	1	6	2	3	2	12					
	Spring	27	8	3	1	3	3	6	17	24	N. 15 29 W.	.44	N. 85° E.	.09	
	Summer	29	5	0	0	0	0	6	40	12	N. 26 49 W.	.74	N. 27 W.	.26	
	Autumn	28	6	0	0	2	1	2	32	20	N. 22 0 W.	.62	N. 8 W.	.16	
	Winter	13	5	1	3	13	7	11	7	31	N. 84 18 W.	.14½	S. 9 E.	.41	
	The year	97	24	4	4	18	11	25	96	87	N. 26 37 W.	.47			
176. Rosetta.[1]	Autumn	7	13	1	3	1	11	19	7	3	N. 62 11 W.	.34	....	...	25
	Winter	8	20	13	12	8	16	25	54	7	N. 50 4 W.	.31	....	...	58
176(*a*). Ismalia.	Spring	43	13	6	4	7	1	11	15	...	N. 4 43 W.	.52	S. 31 E.	.16	
	Summer	69	14	1	1	1	0	2	12	...	N. 0 45 E.	.85½	N. 31½ E.	.26	
	Autumn	65	10	0	1	2	1	8	13	...	N. 7 1 W.	.78	N. 12½ E.	14	
	Winter	22	9	4	2	1	3	36	23	...	N. 43 15 W.	.55	S. 47½ W.	.34	
	The year	199	46	11	8	11	5	57	63	...	N. 12 7 W.	.64½			
176(*b*). Port Said.	Spring	24	23	8	4	5	8	7	21	...	N. 0 34 W.	.41½	N. 29 E.	.18	
	Summer	45	6	2	2	3	5	7	30	...	N. 21 4 W.	.67	N. 16 W.	.31	
	Autumn	38	13	5	8	5	12	9	20	...	N. 16 30 W.	.40	N. 38½ E.	.07	
	Winter	8	11	6	6	13	26	18	12	...	S. 67 14 W.	.12	S. 13½ W.	.45	
	The year	115	53	21	20	26	51	41	83	...	N. 25 38 W.	.36			

[1] Including 12 days observed by Lefebvre at Alexandria in January, 1833.

(Nos. 177 and 178.) **Eastern Mediterranean Sea and its Islands.**

Observed as follows, viz. :—

At *Sea*, during a period of three years, date not preserved.

At *Larnaca, Cyprus*, from October, 1866, to March, 1867, inclusive, by T. B. Sandwith.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
177. At sea.	The year	1060	1960	233	160	336	136	493	263	...	N. 24° 39′ E.	.49	1095
178. Larnaca.	March	5	4	2	0	4	8	3	3	2	N. 87 13 W.	.08½	31
	Oct. & Nov.	11	2	0	2	6	11	3	4	2	N. 89 44 W.	.26½	61
	Winter	18	11	3	3	6	18	13	14	3	N. 56 53 W.	.30½	90

(Nos. 179 to 184.) **Turkey in Asia.**

Observed at the following places, viz. :—

Bagdad, Mesopotamia, during the year 1783.

Bahmdun, Mount Lebanon, Syria, by Rev. S. H. Calhoun, with some interruptions, from November, 1844, to September, 1845, inclusive.

Bassora, from February to June inclusive, in the year 1784.

Beirut, Syria, by Dr. De Forest, from September, 1842, to August, 1843, and from November, 1843, to March, 1844, both inclusive,[1] and 80 days, the date of which is not preserved; also by another observer during the years 1846 to 1854, inclusive.

Damascus, Syria, by Dr. Joseph Dickerson and Frederick Hubbard, from May 27 to June 6, 1857.

Jerusalem, Palestine, by Dr. McGowan, from May, 1846, to February, 1847, and from April to July, 1847, both inclusive, and by Dr. T. Chaplin for a period of 5⅓ years, from 1863 to 1868, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.			Direction.	Force.	
179. Jerusalem.[2]	January	10	0	26	5	41	0	5	0	10	0	35	1	27	5	20	1	....	...	....	...	186
	February	12	0	19	0	15	0	5	0	10	0	34	0	35	0	38	0	....	...	....	...	169
	March	10	0	15	0	30	0	10	0	10	0	20	0	30	0	30	0	....	...	....	...	186
	April	17	0	11	2	13	0	25	0	10	0	32	0	16	0	54	0	....	...	....	...	180
	May	28	0	25	0	24	1	16	0	6	0	17	0	33	0	58	0	....	...	....	...	217
	June	28	0	5	0	11	0	13	0	0	0	15	0	33	1	99	1	....	...	....	...	210
	July	14	0	6	0	0	0	0	0	5	0	5	0	38	0	148	0	....	...	....	...	217
	August	17	0	5	0	0	0	0	0	5	0	5	0	34	0	120	0	....	...	....	...	186
	September	61	0	5	0	5	0	5	0	5	0	5	0	31	0	63	0	....	...	....	...	180
	October	30	0	22	0	36	0	15	0	0	0	10	0	10	0	62	0	....	...	....	...	186
	November	13	0	22	3	42	0	10	0	0	0	25	0	35	0	30	0	....	...	....	...	180
	December	11	0	22	7	32	0	10	0	5	0	47	0	22	1	28	0	....	...	....	...	186
	Spring	55	0	51	2	67	1	51	0	26	0	69	0	79	0	142	0	N. 46° 48′ W.	.22	S. 39½° E.	.14	583
	Summer	59	1	16	0	11	0	13	0	10	0	25	0	105	1	367	1	N. 49 59 W.	.75½	N. 55 W.	.40	613
	Autumn	104	0	49	3	83	0	30	0	5	0	40	0	76	0	155	0	N. 20 20 W.	.38	N. 50½ E.	.15	546
	Winter	33	0	67	12	88	0	20	0	25	0	116	1	84	6	86	1	N. 69 25 W.	.14½	S. 28½ E.	.24	540
	The year	251	1	183	17	249	1	114	0	66	0	250	1	344	7	750	2	N. 44 16 W.	.37½	....	...	2282

[1] Except 19 days wanting in December, 1842, 10 in May, 1843, 7 in November, 1843, 1 in December, 1843, and 10 in March, 1844.

[2] The following extract from a letter of Rev. J. F. Lanneau to the author will serve to give an idea of the winds of Palestine generally :—

"There are, however, some general remarks which my long residence in Syria and the Holy Land enables me to make concerning the direction of the wind and other topics alluded to in your letter, and which may be of some interest to you.

"The whole of Palestine is intersected by a chain of hills, or small mountains, rising to an elevation of nearly three thousand feet, and extending north and south nearly midway between the Mediterranean and the Jordan. On the sea coast the wind generally blows 'off the land,' or from the east or southeast during the night, and follows the sun as the day advances, toward the south, southwest and west, and, perhaps, one-third of the time continuing on to north and northwest, increasing toward sunset, and shortly after dying away to a calm, which lasts until about midnight, when the land breeze again commences. At Jerusalem, however, and in the hill country of Judea, the direction of the wind is almost always from the northwest during winter and summer, except when the Shileak, the Arabic term for the wind commonly known elsewhere as the Sirocco, or east wind, blows from the desert. So uniformly prevalent is the northwestern, that the olive trees in the interior, situated so as to feel its constant influence, are inclined toward the southeast, and their branches checked in their opposite direction by its force, so that, in some cases, three-fourths or more of them are on that side, thus:  This is very strikingly noticed immediately around Jérusalem.

"And this leads me to an obvious answer to one of your questions, viz.: 'Are there any local influences that would affect the direction of the wind?' I have always thought the position of Jerusalem, and that whole region, with the immense evaporation from the Dead Sea, and the Arabian desert to the southeast of it, must be the physical cause of the northwest direction of the wind the greater portion of the year, while the deep

(Nos. 180 to 184.) **Turkey in Asia.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
180. Beirut.	Spring	707	175	28	63	196	715	641	245	4	N. 76° 57′ W.	.42			
	Summer	267	27	0	0	72	876	1112	374	0	S. 85 55 W.	.72½			
	Autumn	702	112	31	5	164	520	789	535	16	N. 66 20 W.	.54			
	Winter	380	61	29	43	342	808	808	275	4	S. 77 30 W.	.55			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 86 19 W.	.54			
181. Bahmdun.[1]	Spring	1	1	8	0	3	13	102	1½	...	S. 51 57 E.	.39	....	...	92
	Summer	12	1	0	0	0	10	7	4	...	N. 62 25 W.	.56	....	...	92
	Autumn	3	2	1	0	0	6	0	1	...	N. 70 53 W.	.20	....	...	60
	Winter[3]	23	1	5	2	16	23	11	7	...	N. 78 42 W.	.29	....	...	90
	The year	39	5	14	2	19	52	28½	13½	...	S. 84 41 W.	.32	....	...	365
	Spring	708	176	36	63	199	728	743	246½	4	N. 78 34 W.	.43	N. 66½° E.	.13	
	Summer	279	28	0	0	72	886	1119	378	0	S. 86 2 W.	.72½	S. 64 W.	.20½	
	Autumn	705	114	32	5	164	526	789	536	16	N. 66 17 W.	.54	N. 14½ E.	.19	
	Winter	403	66	43	43	358	831	819	282	4	S. 77 36 W.	.53½	S. 4 E.	.15½	
	The year	2095	384	111	111	793	2971	3470	1442½	24	N. 70 20 W.	.57			
182. Damascus.	Spring	0	0	0	0	0	0	0	5	0	N. 45 0 W.???	1.00	....	...	5
	Summer	0	0	0	0	0	1	1	3	1	N. 69 47 W.???	.68	....	...	6
183. Bagdad.	January	0	0	0	12	0	0	57	0	93	N. 66 23 W.	.83	....	...	31
	February	93	3	0	24	0	0	18	0	30	N. 21 55 W.	.59	....	...	28
	March	32	10	12	36	28	0	8	0	56	N. 74 30 W.	.30	....	...	31
	April	22	0	4	6	70	0	53	0	23	S. 80 11 W.	.66	....	...	30
	May	21	0	15	13	57	15	36	3	12	S. 65 48 W.	.54	....	...	31
	June	0	0	0	2	13	121	35	0	14	S. 73 59 W.	.93½	....	...	30
	July	0	0	0	0	0	15	155	0	9	N. 89 48 W.	.98	....	...	31
	August	0	0	0	0	91	0	71	0	24	S. 72 43 W.	.86	....	...	31
	September	2	0	0	36	61	0	49	0	30	S. 63 45 W.	.71	....	...	30
	October	0	0	0	0	26	0	0	0	160	N. 54 14 W.	.87	....	...	31
	November	0	2	1	10	0	2	76	6	63	N. 69 5 W.	.66	....	...	30
	December	0	0	21	18	8	0	0	48	77	N. 69 3 W.	.56	....	...	31
	Spring	75	4	31	55	155	15	97	3	91	S. 80 2 W.	.48	S. 38 E.	.20	92
	Summer	0	0	0	2	104	136	261	0	47	S. 76 30 W.	.74	S. 27 W.	.27	92
	Autumn	2	2	6	46	87	2	125	6	253	N. 77 8 W.	.68	N. 39 W.	.10	91
	Winter	93	0	21	54	8	0	75	48	200	N. 54 8 W.	.65	N. 13 E.	.33	90
	The year	170	6	58	157	354	153	558	57	591	N. 84 49 W.	.65	....	...	365
184. Bassora.	February	0	0	12	6	8	23	11	12	...	S. 44 16 W.	.39	....	...	28
	March	3	16	26	0	15	2	76	22	...	N. 76 24 W.	.36	....	...	31
	April	4	8	32	4	9	8	16	10	...	S. 88 0 E.	.27	....	...	30
	May	0	3	6	4	6	5	10	108	...	N. 46 12 W.	.72	....	...	31
	June	0	0	0	0	0	0	3	177	...	N. 45 41 W.	.91	....	...	30
	Spring	7	27	64	8	30	15	82	130	...	N. 53 9 W.	.28	....	...	92

gorge in the mountains, extending all the way from the valley of Jehoshaphat and Hinnom to the Dead Sea, occasions a stronger current over the Holy City and the Mount of Olives. The Arabs have a saying, that Jerusalem is the most windy place in the world, the centre of the earth, and thus attracting all the wind there, etc. During the winter the southwest wind on the coast, and the northwest wind in the interior, generally accompany a rain, though occasionally there is a shower from the southeast. A north wind on the sea coast always drives away rain, but it is generally a very chilly and uncomfortable one, and is considered by the natives as unwholesome. The rainy season commences about the 1st or 15th of October, and continues until the middle of April. Sometimes a few showers fall in September and May."

The following description of the winds of Palestine is taken from Dr. Wm. Smith's Bible Dictionary:—

"N.W. from the Autumnal Equinox to November 1st; west from November to February; east from February to June; and north from June to the Autumnal Equinox."

[1] Sixteen of the W. and S. W. observations are marked "sea breeze" in the original record, and if these be rejected the resultant for the year is S. 87° 56′ W. .28.

[2] Computed from the resultants for the seasons.

[3] Six of these observations were marked "sea breeze" in the original record, and if these be rejected the resultant for the winter is S. 50° 57′ W. .51.

(Nos. 184(*a*) to 188(*a*).) **Northern India.**

Observed at the following places, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Amritsar,	....	0	8	1871.
Dalhousee,	....	0	9	1871.
Dehra Doon,	By direction of the Government, at the head-quarters of the Great Trigonometrical Survey of India, 1868, 1869 and 1870.	4	0	1868, 1869, 1870 and 1871.
Dera Ismail Khan,	....	0	11	1871.
Gurdaspur,	....	0	10	1871.
Kotgarh and the neighboring points, Rampoor & Subatha,	Hourly, with great care, by Capt. Patrick Gerard, in the years 1819 and 1820.	2	0	1819 and 1820. The published abstract of the observations is very meagre, and reduces the winds to only four directions, as given below.
Lahore,	....	0	11	1871.
Lodianah,	....	0	11	1871.
Moultan,	....	2	5	1866, 1867 and 1871.
Murree,	....	1	0	1871.
Peshawur,	....	0	10	1849 and 1871.
Rampoor,	See Kotgarh, above,			
Rawulpindi,	....	0	11	1871.
Sialkote,	....	1	0	1871.
Subatha,	See Kotgarh, above,			

Place of observation.	Time of the year.	North.	N.E. or between N. & E.	East.	S. E or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
		Relative Prevalence of Winds from the Different Points of the Compass.												
184(*a*). Amritsar.	March	0	28	0	17	0	1	0	16	...	N. 47° 13′ E.	.43	N. 7° E.	.33
	June, July	0	16	0	65	0	9	0	32	...	S. 52 52 E.	.25	S. 34 W.	.13
	Autumn	0	39	0	115	0	12	0	16	...	S. 60 16 E.	.56	S. 43 E.	.32
	January, February	0	24	0	43	0	19	0	32	...	S. 69 29 E.	.10	N. 87 W.	.18
	The year[1]	...	...	...	...	...	...	...	...	...	S. 33 8 E.	.33		
184(*b*). Dera Ismail Khan.	Spring	15	53	21	47	10	10	2	24	...	N. 73 45 E.	.38	N. 40 E.	.12
	Summer	4	31	20	82	25	21	0	1	...	S. 49 44 E.	.60	S. 23 E.	.43
	September, November	5	35	6	41	5	5	2	20	...	N. 80 58 E.	.34	N. 51 E.	.06
	Winter	10	41	12	25	8	13	6	65	...	N. 2 52 W.	.28	N. 48 W.	.40
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 33 E.	.28½		
184(*c*). The two preceding combined.	Spring	15	81	21	64	10	11	2	40	...	N. 66 32 E.	.38½	N. 18 E.	.20
	Summer	4	47	20	147	25	30	0	33	...	S. 51 29 E.	.46½	S. 26 E.	.27
	Autumn	5	74	6	156	5	17	2	36	...	S. 70·58 E.	.45	S. 50 E.	.18
	Winter	10	65	12	68	8	32	6	97	...	N. 10 54 E.	.15½	N. 54½ W.	.32
	The year[1]	...	...	...	...	...	...	...	...	...	S. 83 33 E.	.29½		
185. Moultan, 1866 and 1867.	January	14	2	2	3	0	2	2	6	0				
	February	11	2	1	1	5	2	0	2	4				
	March	6	8	1	4	3	4	1	4	0				
	April	8	6	2	3	3	4	0	3	1				
	May	7	2	3	2	3	7	2	3	2				
	June	2	4	1	3	7	11	1	0	1				
	July	3	1	0	3	6	14	0	0	4				
	August	4	3	0	2	14	3	0	3	2				
	September	2	1	1	2	11	11	1	1	0				
	October	6	2	0	0	6	8	4	4	1				
	November	5	3	1	2	3	2	9	5	0				
	December	7	4	2	3	4	1	2	4	4				
	Spring	21	16	6	9	9	15	3	10	3	N. 12 37 E.	.15	N. 38½ E.	.21
	Summer	9	8	1	8	27	28	1	3	7	S. 16 34 W.	.40½	S. 3 W.	.37
	Autumn	13	6	2	4	20	21	14	10	1	S. 63 53 W.	.33	S. 57½ W.	.24
	Winter	32	8	5	7	9	5	4	12	8	N. 0 49 W.	.32	N. 15 E.	.35
	The year	75	38	14	28	65	69	22	35	19	S. 78 42 W.	.10		

[1] Computed from the resultants for the seasons.

(Nos. 185(*a*) to 186(*f*).) **Northern India.**—*Continued.*

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
185(*a*). Moultan (entire period).	Spring	31	43	7	15	16	71	4	26	3	N. 83° 21′ W.	.11½	N. 2° W.	.10
	Summer	22	30	8	17	44	135	2	11	7	S. 32 29 W.	.43	S. 22 W.	.30
	Autumn	25	19	13	53	35	85	19	23	1	S. 21 57 W.	.31	S. 1½ W.	.20
	Winter	56	62	8	27	10	40	4	55	8	N. 0 14 W.	.30	N. 16 E.	.40
	The year[1]	...	...	...	...	...	...	...	...	...	S. 54 45 W.	.14		
186. Peshawur.	Spring	44	7	40	3	8	15	85	1	...	N. 57 45 W.	.33		
	Summer	51	50	43	15	24	30	78	15	...	N. 26 55 W.	.15		
	Autumn	64	23	11	2	1	0	18	3	...	N. 60 6 E.	.66		
	Winter	51	0	30	0	1	0	36	0	...	N. 50 11 W.	.06		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 13 18 W.	.36		
186(*a*). Rawulpindi.	Spring	6	15	38	9	16	9	79	12	...	S. 84 39 W.	.21½	N. 62 W.	.16½
	Summer	3	28	40	72	10	20	5	6	...	S. 61 13 E.	.48	S. 75 E.	.50½
	September – November	4	14	16	20	11	19	29	7	...	S. 20 19 W.	.17½	S. 5 E.	.07
	Winter	9	12	23	7	13	5	99	12	...	N. 86 31 W.	.41½	N. 70 W.	.37
	The year[1]	...	...	...	...	...	...	...	...	...	S. 32 21 W.	.08		
186(*b*). The two preceding combined.	Spring	50	22	78	12	24	24	164	13	...	N. 73 59 W.	.23½	S. 69½ W.	.24
	Summer	54	78	83	87	34	50	83	21	...	S. 83 3 E.	.11½	S. 57 E.	.25
	Autumn	68	37	27	22	12	19	47	10	...	N. 0 1 E.	.24	N. 38½ E.	.15
	Winter	60	12	53	7	14	5	135	12	...	N. 55 58 W.	.32½	N. 71 W.	.18½
	The year[1]	...	...	...	...	...	...	...	...	...	N. 38 34 W.	.15		
186(*c*). Lahore.	April – May	15	23	21	12	5	6	15	25	...	N. 15 39 E.	.27	N. 38½ E.	.12
	Summer	8	18	46	40	4	35	24	9	...	S. 46 41 E.	.24	S. 29 E.	.37½
	Autumn	23	23	18	26	6	22	20	44	...	N. 24 43 W.	.18	N. 88½ W.	.07
	Winter	17	19	20	17	1	6	19	81	...	N. 26 7 W.	.43½	N. 39 W.	.30
	The year[1]	...	...	...	...	...	...	...	...	...	N. 2 40 W.	.16		
186(*d*). Sialkote.	January	2	4	11	3	3	3	26	10					
	February	3	7	18	3	4	0	15	6					
	March	6	5	6	0	1	4	28	12					
	April	5	9	10	4	5	1	19	4					
	May	3	2	8	17	7	6	17	2					
	June	2	3	13	16	6	5	6	5					
	July	4	0	21	21	13	1	0	2					
	August	0	0	25	16	4	6	11	0					
	September	2	4	33	6	2	0	10	3					
	October	8	0	6	0	10	0	34	4					
	November	1	0	2	0	11	1	44	1					
	December	2	1	8	2	3	6	39	1					
	Spring	14	16	24	21	13	11	64	18	...	N. 86 29 W.	.22		
	Summer	6	3	59	53	23	12	17	7	...	S. 50 40 E.	.49		
	Autumn	11	4	41	6	23	1	88	8	...	S. 79 39 W.	.47		
	Winter	7	12	27	8	10	9	80	17	...	N. 84 32 W.	.34		
	The year	38	35	151	88	69	33	249	50	...	S. 50 51 W.	.13		
186(*e*). Dalhousee.	March – April	25	13	22	11	12	4	15	18	...	N. 18 47 E.	.21½	N. 76 W.	.06
	July – August	8	7	9	1	13	19	54	13	...	S. 85 23 W.	.50	S. 69 W.	.67
	Autumn	33	7	94	8	0	0	0	40	...	N. 51 34 E.	.53½	N. 64 E.	.32
	December – February	21	43	33	3	14	4	0	0	...	N. 62 15 E.	.60	N. 78 E.	.41
	The year	...	...	...	...	...	...	...	...	...	N. 34 9 E.	.16		
186(*f*). Gurdaspur.	April – May	5	8	5	17	11	23	12	34	...	S. 81 12 W.	.26	S. 32½ W.	.12
	June – August	3	12	12	19	26	41	4	5	...	S. 2 52 W.	.44	S. 18½ E.	.52
	Autumn	12	57	4	14	7	8	14	64	...	N. 7 59 W.	.42	N. 21 E.	.38
	December	8	1	2	3	6	5	7	30	...	N. 55 47 W.	.52½	N. 45 W.	.34
	The year	...	...	...	...	...	...	...	...	...	N. 73 19 W.	.20		

Computed from the resultants for the seasons.

(Nos. 186(*g*) to 188(*b*).) **Northern India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
186(*g*). Murree.	January	3	4	2	5	15	13	8	11					
	February	1	0	1	11	15	5	18	1					
	March	8	0	0	0	20	2	15	16					
	April	3	1	9	5	8	5	14	2					
	May	3	2	5	4	8	4	22	14					
	June	17	0	4	2	13	2	16	5					
	July	21	1	4	7	4	4	3	16					
	August	20	6	10	7	8	3	6	2					
	September	1	0	5	6	5	4	29	8					
	October	6	0	3	3	8	5	26	10					
	November	7	1	7	5	9	5	20	6					
	December	6	3	14	15	5	1	13	4					
	Spring	14	3	14	9	36	11	51	32	...	S. 76° 23′ W.	.29½	S. 69° W.	.06
	Summer	58	7	18	16	25	9	25	23	...	N. 19 48 W.	.21½	N. 31 E.	.29
	Autumn	14	1	15	14	22	14	75	24	...	S. 82 26 W.	.43	S. 85½ W.	.20
	Winter	10	7	17	31	35	19	39	16	...	S. 24 15 W.	.28	S. 28 E.	.24
	The year	96	18	64	70	118	53	190	95	...	S. 81 14 W.	.27		
186(*h*). Nos. 186(*d*) to 186(*g*) combined.	Spring	58	40	65	58	72	49	142	102	...	N. 84 38 W.	.19½	N. 86 W.	.10
	Summer	75	29	98	89	87	81	100	48	...	S. 7 10 W.	.13	S. 31 E.	.16
	Autumn	70	69	154	42	52	23	177	136	...	N. 38 38 W.	.17	N. 2½ W.	.12
	Winter	46	63	79	45	65	37	126	63	...	N. 73 49 W.	.08	N. 60 E.	.02½
	The year	...	...	...	...	...	...	...	...	...	N. 83 5 W.	.10		
187. Kotgarh and vicinity for 1871.	Spring	...	17	25	...	...	42	29	...	...	S. 50 50 W.	.25	S. 71 W.	.22
	Summer	...	19	93	...	...	21	43	...	...	S. 88 20 E.	.27½	N. 74 E.	.27
	Autumn	...	10	40	...	...	21	27	...	...	S. 33 51 E.	.09½	N. 85 E.	.04
	Winter	...	21	45	...	...	40	42	...	...	S. 37 50 W.	.11½	S. 85 W.	.08½
	The year	...	...	...	...	...	...	...	...	...	S. 11 9 E.	.08½		
187(*a*). Lodianah.	Spring	2	29	8	30	1	4	7	101	...	N. 24 43 W.	.41½	N. 40 W.	.20
	Summer	5	20	17	101	4	4	3	30	...	S. 63 20 E.	.46	S. 50 E.	.66
	Autumn	8	13	7	42	5	4	3	96	...	N. 30 7 W.	.31	N. 68 W.	.11
	January, February	0	25	2	11	0	5	6	69	...	N. 28 23 W.	.53	N. 42 W.	.32
	The year	...	...	...	...	...	...	...	...	...	N. 11 14 W.	.05		
188. Dehra Doon, 1868 to 1870.	January	3	0	3	2	24	34	26	14	67				
	February	6	1	2	6	23	35	29	13	55				
	March	1	5	4	6	20	42	39	16	53				
	April	3	6	3	5	20	33	41	18	50				
	May	4	3	3	7	23	67	38	11	30				
	June	8	3	5	7	18	42	28	16	53				
	July	11	3	2	2	9	32	15	13	98				
	August	3	0	5	4	19	31	15	30	79				
	September	4	1	0	5	10	16	27	33	80				
	October	6	1	1	2	8	28	22	20	93				
	November	4	4	3	6	10	25	30	14	94				
	December	3	1	4	2	18	25	30	24	78				
	Spring	8	14	10	18	63	142	118	45	133	S. 59 51 W.	.46	S. 39½ W.	.12
	Summer	22	6	12	13	46	105	58	59	230	S. 67 31 W.	.29	N. 61½ E.	.06
	Autumn	14	6	4	13	28	69	79	67	267	S. 82 39 W.	.29	N. 16 E.	.11
	Winter	12	2	9	10	65	94	85	51	200	S. 62 22 W.	.36½	S. 2 W.	.02
	The year	56	28	35	54	202	410	340	222	830	S. 66 49 W.	.35		
188(*a*). Dehra Doon, 1871.	January	...	...	...	.	...	...	...	...	...	N. 81 0 W.			
	February	...	...	...	...	...	...	...	...	...	S. 66 0 W.			
	March	...	...	...	...	...	...	...	...	...	S. 86 0 W.			
	April	...	...	...	...	...	...	...	...	...	S. 70 0 W.			
	May	...	...	...	...	...	...	...	...	...	S. 38 0 W.			
	June	...	...	...	...	...	...	...	...	...	N. 20 0 E.			
	July	...	...	...	...	...	...	...	...	...	S. 50 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. 77 0 E.			
	September	...	...	...	...	...	...	...	...	...	S. 64 0 W.			
	October	...	...	...	...	...	...	...	...	...	N. 57 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 48 0 W.			
	December	...	...	...	..	....	...	...	...	...	S. 67 0 W.			
188(*b*). Nos 187(*a*) to 188(*a*) combined.	Spring	10	60	43	48	64	188	154	146	133	S. 74 29 W.	.33	S. 74½ W.	.11
	Summer	27	45	122	114	50	130	104	89	230	S. 13 37 W.	.11	S. 74 E.	.19
	Autumn	22	29	51	55	33	94	109	163	267	N. 83 51 W.	.22	N. 7 W.	.09
	Winter	12	48	56	21	65	139	133	120	200	S. 77 22 W.	.27	S. ½ W.	.06
	The year	...	...	...	...	...	...	..	...	...	S. 74 9 W.	.21½		

(No. 188(*c*).)

Ladak, Thibet.

Observations taken in the month of September, 1871.

	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
	North.	N.E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S.W. or betw'n S. & W.	West.	N.W. or betw'n N. & W.	Calm or variable.		
September	1	1	0	0	9	11	31	2	0	S. 70° 55' W.	.55

(Nos. 189 to 193.)

China and Southern Japan.

Observed at the following places, viz. :—

Decima, Japan, during the years 1845 to 1848, and 1852 to 1855—7 years.

Nangasaki, Japan, during an aggregate period of $6\frac{1}{2}$ years, from 1848 to 1855.

Shanghae, China, by Dr. D. B. McCartee, from November, 1850, to October, 1852, inclusive; also for two years by another observer in the years 1867 to 1869.

Simoda, Japan, by officers attached to the expedition under command of Commodore Perry, for an aggregate period of 76 days.

Tinghai, China, by Champenois, from September, 1860, to February, 1861, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
189. Shanghae.	Spring	89	...	149	...	82	...	175	...	113	...	14	...	31	...	79	...	4	N. 89° 2' E.	.29	S. $25\frac{1}{2}$° E.	.21	368
	Summer	40	...	73	...	77	...	238	...	185	...	49	...	12	...	40	...	7	S. 89 19 E.	.37	S. $40\frac{1}{2}$ E.	.27	368
	Autumn	126	...	194	...	59	...	94	...	31	...	23	...	53	...	143	...	5	N. 20 13 E.	.36½	N. 26 W.	.16	364
	Winter	199	..	112	...	63	...	67	...	25	...	24	...	41	...	188	...	3	N. 0 7 E.	.45	N. $37\frac{1}{2}$ W.	.32	361
	The year	454	...	528	...	281	...	574	...	354	...	110	...	137	...	450	...	19	N. 60 18 E.	.21	....	...	1461
190. Tinghai.	Autumn	20	...	44	...	20	...	20	...	0	...	4	...	0	...	54	...	8	N. 15 54 E.	.45	....	...	85
	Winter	21	...	1	...	2	...	7	...	0	...	14	...	9	...	82	...	27	N. 46 52 W.	.58	....	...	82
191. Decima.[1]																							
192. Nangasaki.	January	245	3	68	0	17	2	13	1	14	0	17	0	27	4	100	8	5					
	February	196	4	34	1	12	3	14	0	11	1	23	1	20	2	83	7	2					
	March	214	5	25	2	21	1	16	1	36	1	32	0	21	2	52	3	2					
	April	146	1	23	1	17	0	24	0	103	0	49	1	23	1	38	4	14					
	May	129	1	22	1	27	0	21	5	109	0	45	5	21	3	50	1	2					
	June	89	1	8	0	31	3	12	0	130	5	50	6	22	1	32	4	1					
	July	47	0	13	0	23	1	58	4	280	4	83	3	37	0	25	0	0					
	August	81	0	50	0	19	1	64	0	214	5	81	2	19	6	38	4	0					
	September	171	4	122	2	53	0	49	0	78	0	24	0	11	0	37	2	0					
	October	260	0	106	0	36	0	40	1	44	0	26	0	22	0	75	7	0					
	November	255	7	49	1	22	0	17	1	27	0	33	0	39	0	84	4	5					
	December	291	4	50	1	16	2	6	1	19	0	17	0	16	3	102	12	10					
	Spring	489	7	70	4	65	1	61	6	248	1	126	6	65	6	140	8	18	N. 20 25 W.	.17	S. 14 W.	.06	
	Summer	217	1	7	0	73	5	134	4	624	14	214	11	78	7	95	8	1	S. 13 30 W.	.41	S. 5 W.	.60	
	Autumn	686	11	277	3	111	0	106	2	149	0	83	0	72	0	196	13	5	N. 8 38 E.	.45	N. 64 E.	.26	
	Winter	732	11	152	2	45	7	33	2	44	1	57	1	63	9	285	27	17	N. 13 42 W.	.67	N. 6 W.	.44	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 12 47 W.	.22			
193. Simoda.	Spring	0	6	40	3	8	3	6	2	6	2	21	5	3	2	2	0	8	N. 76 52 E.?	.11	....	...	51
	Summer	0	0	12	0	0	0	0	0	0	0	11	0	0	0	0	0	2	N. 45 0 E.??	.04	....	...	25

[1] Observations not received in time for insertion.

[2] Computed from the resultants for the seasons.

(No. 194.) **Pacific Ocean.**

Computed from observations for an aggregate period of 865 days, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
194. Longitude 120° to 150° E.	Spring	97	57	92	52	58	18	38	19	47	26	59	25	27	33	65	48	28	N. 15° 35′ E.	.22	263
	Summer	21	19	39	86	220	86	130	75	147	80	164	99	101	10	23	3	33	S. 12 30 E.	.34	449
	Autumn	14	18	28	24	51	9	29	7	40	26	18	19	33	4	21	8	10	S. 49 52 E.	.13	120
	Winter	28	4	21	3	2	1	11	0	4	1	3	1	3	3	22	2	2	N. 4 53 E.	.46	37
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 48 18 E.	.09	865

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 12.

Observations at Bagdad, by Dr. Schläpli, in July and August, 1861, and from March to September, 1862, and of Lieut. Collingwood, in the years 1850 to 1852, in all 22 months. At Samana, on the lower Euphrates, by Dr. Schläpli, from September, 1861, to February, 1862, 6 months.

Place of observation.	Time of the year.	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.
183(*a*). Bagdad.	Spring	70	5	3	90	55	50	60	670
	Summer	5	10	0	20	10	15	10	930
	Autumn	50	30	30	125	10	25	20	710
	Winter	20	5	10	310	30	70	10	550
	The year	...	...	...	...	...	...	...	...
183(*b*). Samana.	Autumn	120	0	140	170	0	0	20	550
	Winter	40	0	30	250	0	60	20	600

ZONE No. 13.

Latitude 25° to 30° North.

The data for the study of the winds of this zone consist of observations made at over 115 stations on land, for an aggregate period of over 280 years; and at sea for about 23 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	12 years 10 months.
Mexico,	10+	3 years 4 months.
United States,	64	217 years 11 months.
Atlantic Ocean,	....	nearly 10 years.
Islands of the Atlantic,	2	over 4 years 1 month.
Africa,	15	3 years 3 months.
Persian Gulf,	....	145 days.
Asia,	24	41 years.
Islands of the Pacific,	2	118 days.

(Nos. 1 to 5.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of about 13 years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Longitude 155° to 165° W.	Spring	44	191	284	443	167	66	56	22	24	39	13	11	12	17	30	52	24	N. 61° 02′ E.	.66	N. 13° E.	.19	498
	Summer	16	9	37	158	119	131	26	51	10	30	9	25	8	17	33	13	7	N. 88 23 E.	.52	S. 7 W.	.12	233
	Autumn	126	188	340	322	363	184	171	70	81	53	78	56	93	38	87	31	90	N. 72 23 E.	.43	S. 86 W.	.12	790
	Winter	2	3	33	15	37	11	1	0	7	0	12	0	0	0	2	0	1	N. 78 59 E.	.63	S. 6½ W.	.09	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 28 E.	.55	....	...	1562
2. Longitude 145° to 155° W.	Spring	6	6	18	0	11	1	19	4	0	0	0	3	1	0	3	0	1	N. 77 53 E.	.50	N. 85½ E.	.07	24
	Summer	9	12	72	30	63	13	12	5	8	3	6	0	4	3	0	2	1	N. 71 25 E.	.67	N. 62½ E.	.24	81
	Autumn	125	55	352	163	257	134	249	134	137	52	103	26	65	16	64	24	71	N. 85 43 E.	.38	S. 30 W.	.08	676
	Winter	14	6	33	10	21	7	13	18	7	4	12	3	17	8	16	0	2	N. 67 45 E.	.17	S. 82½ W.	.26	64
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 77 8 E.	.43	....	...	845
3. Longitude 135° to 145° W.	Spring	3	17	38	13	6	10	0	3	0	0	6	3	3	0	10	1	4	N. 43 35 E.	.55	S. 86 E.	.07	39
	Summer	11	33	82	11	3	2	0	0	0	2	4	0	0	1	1	1	9	N. 38 36 E.	.80	N. 41 E.	.29	53
	Autumn	72	17	119	9	9	8	18	5	10	3	16	11	9	3	18	8	13	N. 28 21 E.	.48	N. 68 W.	.07	116
	Winter	17	11	38	11	9	15	13	2	7	0	14	15	21	3	8	3	7	N. 34 48 E.	.18	S. 39 W.	.31	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 37 10 E.	.65	....	...	273
4. Longitude 125° to 135° W.	Spring	32	28	50	5	15	0	10	1	1	0	3	0	0	0	13	9	2	N. 29 55 E.	.63	N. 15 W.	.01	56
	Summer	39	82	71	33	3	0	0	0	0	0	0	0	0	0	2	5	4	N. 31 22 E.	.90	N. 31½ E.	.28	80
	Autumn	26	55	62	66	13	5	9	8	9	8	5	15	3	4	11	23	20	N. 38 56 E.	.51	South.	.14	114
	Winter	24	36	55	35	16	12	8	1	6	5	13	9	14	12	20	27	7	N. 22 28 E.	.42	S. 48 W.	.22	100
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 31 15 E.	.62	....	...	350
5. Longitude 105° to 125° W.	Spring	25	8	2	0	1	0	0	0	0	1	1	0	1	10	49	32	5	N. 27 45 W.	.85	N. 57 W.	.16	45
	Summer	21	17	28	5	0	0	2	0	0	1	0	1	7	3	40	36	2	N. 9 58 W.	.77	N. 52 E.	.16	54
	Autumn	100	87	81	24	2	0	19	3	3	2	14	20	48	38	315	94	16	N. 24 25 W.	.67	S. 20 W.	.05	289
	Winter	91	76	41	28	4	9	11	4	5	7	10	24	40	44	177	89	13	N. 23 29 W.	.62	S. 6½ E.	.09	224
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 21 31 W.	.71	....	...	612

[1] Computed from the resultants for the seasons.

(Nos. 6 to 8.) **Eastern Mexico,** latitude 25° to 27°.

Observed at the following places, viz. :—

Matamoras, from March to September, 1843, and from November, 1846, to May, 1848, both inclusive.

Monterey, Saltillo, Chino, Como, Rio Grande City, Moquete, Toya, St. Theresa, San Francisco, and other places, by Louis Berlandier, M.D., for an aggregate period of 72 days, during transient sojourns, about the year 1820.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
6. Monterey, etc.	Spring	0	1	0	40	8	1	0	10	1	S. 35° 59′ E.???	.59	15
	Summer	0	3	2	128	9	7	0	1	15	S. 41 12 E.???	.82	14
	Autumn	0	0	1	3	1	0	0	0	0	S. 45 0 E.???	.88	3
	Winter	13	18	0	9	2	5	2	4	8	N. 32 48 E.??	.33	40
	The year[1]	...	...	...	...	...	...	...	...	...	S. 59 15 E.??	.49	72
7. Matamoras.	Spring	114	100	303	487	319	83	21	77	117	S. 50 25 E.	.47	276
	Summer	8	88	400	289	66	37	6	29	121	S. 71 5 E.	.63	184
	Autumn	121	77	203	99	50	30	7	9	5	N. 82 6 E.	.49	151
	Winter	214	81	105	72	172	24	13	25	0	N. 73 29 E.	.24	181
	The year[1]	...	...	...	...	...	...	...	...	...	S. 77 44 E.	.42	792
8. The two preceding combined.	Spring	114	101	303	527	327	84	21	87	118	S. 49 46 E.	.47	
	Summer	8	91	402	417	75	44	6	30	136	S. 66 22 E.	.63⅓	
	Autumn	121	77	204	102	51	30	7	9	5	N. 82 47 E.	.49⅓	
	Winter	227	99	105	81	174	29	15	29	8	N. 69 33 E.	.24½	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 76 5 E.	.43	

[1] Computed from the resultants for the seasons.

(Nos. 9 to 12.) **Southwestern Texas**, latitude 29° to 30°.

Observed at the following military posts by the officers in charge, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Fort Clark,	Post Surgeon,	8	6	1852 to 1861 inclusive, and 1869.
Fort Inge,	Post Surgeon,	7	2	1850 to 1854 and 1858 to 1861, both inclusive.
Fort Lincoln,	Post Surgeon,	2	3	1849 to 1852 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
9. Fort Clark.	January	176	98	148	116	55	8	25	40	0				
	February	127	115	140	155	32	4	19	68	0				
	March	66	94	162	196	66	14	19	58	0				
	April	48	82	242	219	25	10	10	33	0				
	May	45	73	174	304	64	1	6	25	0				
	June	22	60	179	348	89	9	3	21	0				
	July	16	70	189	426	53	1	3	1	0				
	August	17	76	262	419	110	10	6	1	3				
	September	53	95	268	328	136	10	16	14	0				
	October	103	140	218	289	109	6	47	44	0				
	November	195	109	204	254	80	16	30	48	2				
	December	244	112	171	121	86	6	41	102	0				
	Spring	159	249	578	719	155	25	35	116	0	S. 76° 38′ E.	.57		
	Summer	55	206	630	1193	252	20	12	23	3	S. 60 29 E.	.76		
	Autumn	351	344	690	871	325	32	93	106	2	S. 76 44 E.	.49½		
	Winter	547	325	459	392	173	18	85	210	0	N. 57 18 E.	.39		
	The year[1]	...	...	...	...	...	...	...	...	...	S. 78 32 E.	.51½		
10. Fort Lincoln.	Spring	162	67	59	372	261	76	41	32	...	S. 36 5 E.	.40		
	Summer	36	20	68	445	247	77	6	12	...	S. 30 28 E.	.71		
	Autumn	77	114	45	197	157	63	19	83	...	S. 48 53 E.	.25		
	Winter	195	147	67	204	253	53	38	72	...	S. 65 48 E.	.20		
	The year[1]	...	...	...	...	...	...	...	...	...	S. 39 18 E.	.38		
11. Fort Inge.	January	89	80	194	77	21	53	36	72					
	February	48	119	162	120	10	7	23	33					
	March	49	107	221	64	11	20	18	50					
	April	41	95	186	159	10	3	11	16					
	May	29	45	321	206	9	6	13	10					
	June	8	50	227	193	11	1	0	0					
	July	3	46	334	189	69	5	0	0					
	August	8	68	290	282	42	9	4	10					
	September	18	150	206	167	16	17	9	15					
	October	62	123	194	192	13	7	10	50					
	November	97	150	129	165	23	11	16	26					
	December	95	154	113	104	11	28	27	62					
	Spring	119	247	728	429	30	29	42	76	...	S. 85 0 E.	.64½		
	Summer	19	164	851	664	122	15	4	10	...	S. 71 59 E.	.80½		
	Autumn	177	423	529	524	52	35	35	91	...	N. 84 59 E.	.58		
	Winter	232	353	469	301	42	88	86	167	...	N. 66 58 E.	.62½		
	The year	547	1187	2577	1918	246	167	167	344	...	S. 88 46 E.	.59½		
12. Forts Lincoln and Inge combined.	Spring	281	314	787	801	291	105	83	108	...	S. 75 17 E.	.50	S. 20° E.	.02
	Summer	55	184	919	1109	369	92	10	22	...	S. 59 43 E.	.73	S. 32 E.	.31
	Autumn	254	537	574	721	209	98	54	174	...	S. 88 31 E.	.46½	N. 8 W.	.09
	Winter	427	500	536	505	295	141	124	239	...	N. 76 58 E.	.31½	N. 43 W.	.25
	The year	1017	1535	2816	3136	1164	436	271	543	...	S. 76 52 E.	.48½		

[1] Computed from the resultants for the seasons.

(Nos. 13 to 15.) **Southern Central Texas**, latitude 29° to 30°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time.		Date.
		yrs.	mos.	
New Braunfels,	A. Forke & Otto Friedrich,	5	9	1854 to 1860 inclusive.
San Antonio,	F. Petterséu, M.D., & others,	8	7	1846, 1849 to 1852, 1857 to 1861, both inclusive, and 1872.
Sisterdale,	Ernest Knapp,	0	3	1860.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
13. San Antonio.	January	218	120	99	104	116	58	44	67					
	February	136	107	104	139	113	65	35	53					
	March	125	107	113	209	151	112	55	42					
	April	90	87	99	160	177	34	28	34					
	May	34	58	148	246	197	41	24	16					
	June	22	61	107	306	178	59	9	15					
	July	37	29	101	302	264	79	51	9					
	August	16	51	133	289	285	99	17	4					
	September	51	202	165	211	97	45	16	15					
	October	121	161	133	155	131	70	33	51					
	November	188	101	69	113	92	50	37	61					
	December	222	158	77	87	73	42	25	49					
	Spring	249	252	360	615	525	187	107	92	...	S. 48° 7′ E.	.38	S. 3° E.	.09
	Summer	75	141	341	897	727	237	77	28	...	S. 31 17 E.	.62	S. 7 E.	.37
	Autumn	360	464	367	479	320	165	86	127	...	N. 89 48 E.	.31½	N. 12 E.	.17
	Winter	576	385	280	330	302	165	104	169	...	N. 54 49 E.	.24	N. 15 W.	.31
	The year[2]	...	...	...	...	...	...	...	...	...	S. 59 53 E.	.32		
13(*a*). San Antonio, Number of observations.	Spring	22	33	16	88	11	8	5	5	88	S. 71 15 E.	.49		
	Summer	2	12	10	117	7	4	1	0	124	S. 50 13 E.	.83		
	Autumn	41	42	10	55	6	5	1	2	108	N. 70 6 E.	.47		
	Winter	47	54	10	23	8	9	7	18	97	N. 30 9 E.	.44		
	The year	115	141	46	283	32	26	14	25	417	S. 85 11 E.	.44		
Miles per hour.	Spring	17.8	7.9	5.0	6.9	6.5	6.8	9.6	7.8					
	Summer	7.0	5.4	5.9	7.4	8.0	7.5	3.0	...					
	Autumn	18.7	5.3	6.9	4.7	5.7	7.2	4.0	8.5					
	Winter	22.9	7.9	5.3	6.5	9.6	7.0	14.9	18.1					
	The year	20.0	6.9	5.7	7.4	7.4	7.0	10.8	15.4					
Number of miles.[1] Spring	7 A. M.	215	33	5	110	9	11	12	24					
	2 P. M.	92	162	38	313	60	40	29	7	...	N. 84 0 E.	.38		
	9 "	84	65	37	184	2	3	7	8					
Summer	7 A. M.	10	5	0	98	8	0	0	0					
	2 P. M.	4	46	39	442	42	28	3	0	...	S. 48 0 E.	.86		
	9 "	0	14	20	319	6	2	0	0					
Autumn	7 A. M.	339	54	10	6	4	0	0	0					
	2 P. M.	240	117	12	159	28	30	4	17	...	N. 25 0 E.	.58		
	9 "	245	53	47	89	2	6	0	0					
Winter	7 A. M.	497	135	10	10	6	0	16	83					
	2 P. M.	254	221	33	119	71	56	81	176	...	N. 4 0 E.	.61		
	9 "	324	69	10	20	0	7	0	69					
The Year	7 A. M.	1061	227	25	224	27	11	28	107	...	N. 12 0 E.	.66		
	2 P. M.	590	546	122	1033	201	154	117	200	...	N. 85 30 E.	.32		
	9 "	653	201	114	612	10	18	7	77	...	N. 58 0 E.	.43		
Total	....	2304	974	261	1869	238	183	152	384	...	N. 65 0 E.	.38		

[1] Observed with Robinson's anemometer for the hour preceding each of the three observations 7 A.M., 2 P.M. and 9 P.M., and the resultants computed by plotting.

[2] Computed from the resultants for the seasons.

(Nos. 14 and 15.) **Southern Central Texas.**—*Continued.*

Place and kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
14. Surface winds at New Braunfels in 1854, '55, '56 & '57.[1]	No. of observations.	Spring	241	41	161	172	203	66	36	36	...	S. 69° 33′ E.	.1996		
		Summer	76	41	224	223	222	57	19	20	...	S. 48 16 E.	.420		
		Autumn	233	69	157	87	96	27	28	37	...	N. 55 55 E.	.240		
		Winter	362	49	121	36	117	58	55	69	...	N. 7 54 E.	.249		
		The year[2]	...	...	...	...	...	...	...	...	...	N. 87 31 E.	.184		
	No. of miles.	Spring	2486	150	953	1166	1679	412	165	176	...	S. 86 34 E.	.179		
		Summer	324	221	1341	1484	1334	295	68	62	...	S. 47 7 E.	.594		
		Autumn	2230	313	699	491	625	118	149	203	...	N. 26 35 E.	.292		
		Winter	3464	178	695	386	905	419	308	496	...	N. 3 13 E.	.361		
		The year[2]	...	...	...	...	...	...	...	..	...	N. 76 9 E.	.210		
	M'n vel. in miles p.h'r.	Spring	10.32	3.66	5.30	6.78	8.27	6.24	4.58	4.89					
		Summer	4.26	5.39	5.99	6.65	6.01	5.18	3.58	3.10					
		Autumn	9.57	4.54	4.45	5.64	6.51	4.37	5.32	5.49					
		Winter	9.57	3.63	5.74	10.22	7.74	7.22	5.60	7.19					
15. Aggregate number of observations at all stations.	Surface wind.	Spring	615	374	684	1016	864	298	175	190	166	S. 55 49 E.	.32		
		Summer	223	262	719	1533	1371	401	152	81	289	S. 33 20 E.	.53		
		Autumn	782	598	591	683	514	207	155	236	246	N. 77 29 E.	.26		
		Winter	1173	489	452	545	446	250	198	309	210	N. 38 58 E.	.23		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 68 4 E.	.26		
	Motion of clouds.	Spring	27	15	25	31	72	71	42	79	...	S. 60 46 W.	.28½		
		Summer	21	11	45	19	62	29	38	47	...	S. 36 58 W.	.16		
		Autumn	18	14	28	14	41	27	37	23	...	S. 43 33 W.	.18		
		Winter	17	7	9	10	22	27	31	26	...	S. 80 38 W.	.32		
		The year[2]	...	...	...	...	...	...	...	...	...	S. 60 25 W.	.22½		
	2 preceding combined.	Spring	642	389	709	1047	936	369	217	269	166	S. 51 50 E.	.28½	S. 5° E.	.08
		Summer	244	273	764	1552	1433	430	190	128	289	S. 32 31 E.	.51½	S. 10 E.	.34½
		Autumn	800	612	616	697	555	234	192	259	246	N. 78 34 E.	.24	N. 7½ E.	.15
		Winter	1190	496	461	555	468	277	229	335	210	N. 36 57 E.	.21½	N. 18 W.	.28
		The year[2]	...	...	...	...	...	...	...	...	...	S. 65 40 E.	.24		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.52	5.82	6.58	7.92	6.96
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.50	2.44	1.58	1.97	1.28
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.35	3.46	1.92	2.86	1.46
Excess of the latter over the former	—.15	+1.02	+.34	+.89	+.18

[2] Computed from the resultants for the seasons.

(Nos. 16 to 20.) **Texas,** latitude 28° to 29°.

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Aransas Bay,	L. Berlandier, M.D., & F. Kaler,	0	2	1820 and 1860.
Fort Duncan,	Post Surgeon,	9	11	1849 to 1861 inclusive.
Fort Ewell,	Post Surgeon,	2	1	1852, 1853 and 1854.
Fort Merrill,	Post Surgeon,	2	11	1851 to 1855 inclusive.
Goliad,	John C. Brightman,	1	0	1858.
Indianola,	Post Surgeon,	0	10	1868 and 1869.
Port La Vaca,	James Gardiner,	1	2	1859 and 1869.
Texana,	William Coleman,	0	1	1859.

(Nos. 16 to 20.) **Texas.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass: North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences: Direction.	Force.	Number of days.
16. Fort Duncan.	January	68	131	69	277	44	17	21	222						
	February	44	83	53	336	15	20	23	194						
	March	83	66	152	358	60	16	21	122						
	April	58	77	129	399	51	14	14	65						
	May	22	41	223	473	50	7	4	39						
	June	15	43	161	434	86	2	2	7						
	July	5	18	242	543	44	4	3	13						
	August	12	32	190	508	44	12	4	12						
	September	70	39	210	397	36	22	3	23						
	October	93	72	179	358	62	14	15	127						
	November	91	76	167	246	52	17	24	206						
	December	89	142	45	267	64	20	18	270						
	Spring	163	184	504	1230	161	37	39	226	...	S. 64° 43′ E.	.55½			
	Summer	32	93	593	1485	174	18	9	32	...	S. 56 11 E.	.82			
	Autumn	254	187	556	1001	150	53	42	356	...	S. 71 16 E.	.43			
	Winter	201	356	167	880	123	57	62	686	...	N. 71 27 E.	.19			
	The year	650	820	1820	4596	608	165	152	1300	...	S. 68 5 E.	.47½			
17. Fort Ewell.	Spring	49	40	60	300	72	32	15	33	...	S. 49 17 E.	.52	....	...	184
	Summer	35	16	26	386	26	0	1	6	...	S. 50 51 E.	.79	....	...	184
	Autumn	94	82	94	229	54	11	16	35	...	S. 61 28 E.	.50	....	...	212
	Winter	121	100	66	52	48	45	27	33	...	N. 42 51 E.	.28	....	...	180
	The year[3]	...	...	...	...	...	...	...	...	..	S. 61 42 E.	.47	....	...	760
18. Fort Merrill.[1]	Spring	37	74	46	286	161	43	26	27	...	S. 38 17 E.	.52	....	...	214
	Summer	12	23	54	382	208	43	14	6	...	S. 31 30 E.	.75	....	...	276
	Autumn	95	89	54	267	155	53	40	36	...	S. 45 42 E.	.30	....	...	273
	Winter	146	15	20	46	115	41	93	47	...	N. 81 46 W.	.18	....	...	152
	The year[3]	...	...	...	...	...	...	...	...	...	S. 31 59 E.	.38	....	...	915
19. Long. 98° to 100.[1]	Spring	86	114	106	586	233	75	41	60						
	Summer	47	39	80	768	234	43	15	12						
	Autumn	189	171	153	496	209	64	56	71						
	Winter	267	115	86	98	163	86	120	80						
20. Southern Texas, east of longitude 98°.[2] Surface wind.	Spring	227	155	147	438	165	65	17	67	12	S. 73 19 E.	.37			
	Summer	113	99	194	514	181	160	16	35	91	S. 46 29 E.	.46			
	Autumn	415	182	90	367	126	58	32	61	54	N. 66 6 E.	.28½			
	Winter	508	145	104	147	172	39	34	110	45	N. 23 59 E.	.32			
	The year[3]	...	...	...	...	...	...	...	...	...	S. 89 9 E.	.27			
Motion of clouds.	Spring	98	12	12	40	73	41	36	67	...	N. 69 39 W.	.18			
	Summer	147	18	31	37	18	14	20	89	...	N. 7 45 W.	.45½			
	Autumn	53	16	23	29	34	108	81	98	...	N. 89 5 W.	.39			
	Winter	53	15	14	30	42	102	61	49	...	S. 73 6 W.	.35			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 66 16 W.	.26			
The two combined.	Spring	325	167	159	478	238	106	53	134	12	S. 73 55 E.	.24½	S. 42° E.	.11½	
	Summer	260	117	225	551	199	174	86	124	91	S. 58 2 E.	.30	S. 28½ E.	.20½	
	Autumn	468	198	113	396	160	166	113	159	54	N. 49 25 E.	.14	S. 34½ W.	.08½	
	Winter	561	160	118	177	214	141	95	159	45	N. 8 3 E.	.21½	N. 32½ W.	.23	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 83 25 E.	.16			

[1] Observed at Forts Ewell and Merrill.
[2] Observed at Aransas Bay, Goliad, Indianola, Port La Vaca and Taxana.
[3] Computed from the resultants for the seasons.

(Nos. 21 to 25.) **Southern Texas,** south of latitude 28°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Corpus Christi,	Post Surgeon,	3	0	1844, 1846, 1851, 1854, 1855 and 1856.
Fort Brown,	Post Surgeon,	10	4	1849 to 1861 inclusive, and 1869.
Fort McIntosh,	Post Surgeon,	9	6	1849 to 1859 inclusive, and 1869.
Fort Polk,	Post Surgeon,	0	6	August, 1849, to January, 1860, inclusive.
Laredo,	L. Berlandier,	a few days,		1820 to 1825.
Ringgold Barracks,	Post Surgeon,	9	1	1849 to 1860 inclusive.
Rio Grande City,	L. Berlandier,	a few days,		1820 to 1825.
San Patricio,	J. O. Gaffney,	0	11	1859 and 1860.

(Nos. 21 to 25.) **Southern Texas.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
21. Forts McIntosh and Laredo.	Spring	154	386	301	1350	95	41	24	201	0	S. 69° 10′ E.	.56	S. 81° E.	.09
	Summer	36	153	466	1978	299	16	6	24	14	S. 51 24 E.	.83	S. 33 E.	.40
	Autumn	251	615	318	1397	269	59	55	450	0	S. 77 33 E.	.40	N. 24 W.	.10
	Winter	378	483	206	781	268	115	93	592	33	N. 65 17 E.	.19	N. 45 W.	.37
	The year[1]	...	...	...	...	...	...	...	...	...	S. 67 24 E.	.47		
22. Ringgold Barracks.	Spring	207	141	349	1114	511	14	25	162	...	S. 50 46 E.	.56		
	Summer	25	70	234	1447	786	48	9	24	...	S. 35 27 E.	.81½		
	Autumn	345	339	498	863	399	79	59	214	...	S. 73 5 E.	.40½		
	Winter	574	293	317	577	348	67	150	416	...	N. 58 19 E.	.19		
	The year	1151	843	1398	4001	2044	208	243	816	...	S. 55 4 E.	.44		
23. San Patricio and Corpus Christi.	Spring	79	109	130	488	165	35	12	48	1	S. 84 0 E.	.56		
	Summer	53	91	129	737	232	83	41	25	1	S. 41 25 E.	.65		
	Autumn	170	188	123	398	119	39	29	127	0	S. 84 51 E.	.33		
	Winter	242	173	70	246	44	56	25	144	10	N. 43 47 E.	.29		
	The year[1]	...	...	...	...	...	...	...	...	...	S. 65 48 E.	.38½		
24. Forts Brown and Polk.	Spring	123	209	403	1131	510	198	42	135	0	S. 44 43 E.	.55½		
	Summer	21	140	320	1874	590	286	53	23	0	S. 36 39 E.	.75		
	Autumn	397	553	610	1173	402	162	180	381	11	S. 77 10 E.	.33½		
	Winter	414	326	402	683	430	176	133	582	0	N. 87 37 E.	.14½		
	The year[1]	...	...	...	...	...	...	...	...	...	S. 50 52 E.	.42		
25. Forts Brown and Polk combined with Matamoras.	Spring	237	309	706	1618	829	281	63	212	117	S. 46 37 E.	.52	S. 14 E.	.14
	Summer	29	228	720	2163	656	323	59	52	121	S. 43 39 E.	.70	S. 27½ E.	.31
	Autumn	518	630	813	1272	452	192	187	390	16	S. 80 58 E.	.35½	N. 3 E.	.17
	Winter	628	407	507	755	602	200	146	607	0	N. 83 42 E.	.16½	N. 36½ W.	.31
	The year[1]	...	...	...	...	...	...	...	...	...	S. 56 51 E.	.41		

[1] Computed from the resultants for the seasons.

(Nos. 26 and 27.) **Southeastern Texas,** latitude 29° to 30°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time.	Date.
		yrs. mos.	
Cedar Grove,	Hennell Stevens,	2 1	1867, 1868 and 1869.
Clinton,	....	0 9	1869.
Columbus,	Dr. W. G. De Graffenried,	0 1	September, 1859.
Galveston,	Drs. C. H. Wilkinson and H. A. McComly,	2 2	1840, 1851, 1852 and 1869.
Gonzales,	M. H. Allis,	1 0	1859, 1860 and 1861.
Helena,	Jno. C. Brightman,	0 3	1857.
Houston,	Miss E. Baxter,	1 8	1867, 1868 and 1869.
Lockhart,	....	0 3	1869.
San Felipe,	Louis Berlandier, M.D.,	a few days.	1820 to 1825.
Yorktown,	....	0 1	1869.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds
26. Galveston. No. of miles.	January	2764	599	1252	233	510	0	464	206	332	1	478	24	461	225	2136	17			
	February	531	0	771	0	657	12	997	203	613	216	535	0	106	128	744	0			
	March	1227	0	104	325	962	14	2297	160	1678	5	1320	82	227	0	641	612			
	April	1894	119	535	0	830	115	2052	319	1726	24	661	190	360	98	2186	520			
	May	325	17	23	0	883	430	2851	0	4047	167	277	0	192	0	132	232			
	June	1610	1	307	89	2315	156	644	32	1366	301	348	0	132	4	388	0			
	July	9	3	26	319	359	992	1831	811	261	428	358	16	2	16	30	0			
	August	81	0	32	60	266	191	739	902	538	405	101	0	21	0	13	1			
	September	473	103	943	574	1639	191	417	92	180	65	121	10	85	13	10	9			
	October	1530	51	632	8	462	0	399	0	401	86	242	13	92	17	668	58			
	November	2485	128	574	0	165	0	745	125	664	114	108	28	511	104	2388	65			
	December	2098	0	1169	223	1612	39	475	20	189	32	195	0	300	69	2172	0			
	Spring	3946	136	662	325	2675	559	7100	479	7451	196	2258	272	779	98	2959	1364	...	S. 28° 42′ E.	.25½
	Summer	1700	4	365	468	2940	1339	3214	1745	2165	1134	807	16	155	20	431	1	...	S. 46 6 E.	.52
	Autumn	4488	282	2149	582	2266	191	1561	217	1245	265	471	51	688	134	3066	132	...	N. 22 8 E.	.34
	Winter	5393	599	3182	456	2779	51	1936	428	1134	249	1208	24	867	422	5052	17	...	N. 10 48 E.	.36½
	The year	15527	1021	6358	1831	10660	2140	13811	2870	11995	1844	4744	363	2489	674	11508	1514	...	N. 85 44 E.	.16

(No. 27.) **Southeastern Texas.**—*Continued.*

Kind of observations.		Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
27. Aggregate number of observations.	Surface wind.	Spring	293	97	161	366	573	140	54	106	352	S. 27° 48′ E.	.26		
		Summer	53	71	169	445	532	79	32	43	437	S. 28 23 E.	.47		
		Autumn	327	135	213	252	240	61	82	108	279	N. 82 30 E.	.17		
		Winter	490	184	136	215	337	104	112	212	358	N. 21 44 E.	.10½		
		The year[1]	...	...	...	..	...	...	...	...	...	S. 46 26 E.	.19		
	Motion of clouds.	Spring	36	29	38	58	104	72	72	27	...	S. 19 27 W.	.29		
		Summer	17	25	72	83	185	87	60	16	...	S. 3 26 E.	.47½		
		Autumn	26	31	55	21	47	40	46	20	...	S. 6 47 E.	.10		
		Winter	106	47	46	32	122	55	87	54	...	S. 84 24 W.	.11½		
		The year[1]	...	...	...	...	...	...	...	...	...	S. 10 48 W.	.22		
	The two combined.	Spring	329	126	199	424	677	212	126	133	352	S. 19 32 E.	.25½	S. 8° W.	.10
		Summer	70	96	241	528	717	166	92	59	437	S. 22 45 F.	.46	S. 15½ E.	.29
		Autumn	353	166	268	273	287	101	128	128	279	N. 88 7 E.	.14½	N. 16 E.	.16
		Winter	596	231	182	247	459	159	199	266	358	N. 5 49 W.	.08	N. 25½ W.	.25
		The year[1]	...	...	...	...	...	...	...	...	...	S. 34 23 E.	18		

[1] Computed from the resultants for the seasons.

(Nos. 28 to 32.) **Southeastern Louisiana.**

Observed as follows:—

Place of observation.	By whom observed.	Aggregate length of time. yrs	Aggregate length of time. mos.	Date.
Attakepas,	....	0	2	1843.
Fort Jackson,	Post Surgeon,	1	0	1832.
Frank's Island,	....	0	2	1843.
New Orleans,	Barton, Little and others,[1]	18	10	1826, 1835 to 1842, 1848 to 1850, 1854 to 1861 and 1867 to 1869, all inclusive.
N. Orleans Barracks,	Post Surgeon,	15	1	1826, 1838 to 1840, 1843 to 1853, and 1855 to 1859, all inclusive.

Place and kind of observations.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S & E.	South.	S. W. or between S. & W.	West.	N, W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
28. New Orleans Barracks.	January	277	289	299	146	140	120	146	228					
	February	197	200	246	172	217	160	127	166					
	March	243	248	294	194	261	193	169	173					
	April	225	163	308	248	319	137	154	125					
	May	154	142	276	277	250	149	135	107					
	June	84	86	232	244	220	189	96	97					
	July	91	60	160	143	169	171	136	104					
	August	96	97	123	134	112	101	77	59					
	September	129	162	171	110	61	53	52	39					
	October	269	217	274	114	99	42	65	139					
	November	282	242	277	194	121	93	83	166					
	December	292	248	275	127	152	111	113	184					
	Spring	622	553	878	719	830	479	458	405	...	S. 61° 28′ E.	.16	S. 6° W.	.09
	Summer	271	243	515	521	501	461	309	260	...	S. 22 34 E.	.20	S. 20 W.	.21
	Autumn	680	621	722	418	281	188	200	344	...	N. 53 26 E.	.32	N. 31 E.	.20
	Winter	766	737	820	445	509	391	386	578	...	N. 44 28 E.	.18	N. 12 W.	.11
	The year[2]	...	...	...	...	...	...	...	..	...	N. 84 39 E.	.15		

[1] Lewis B. Taylor, Dr. S. P. Moore, Harrison Thompson, R. W. Foster and E. L. Ranlett.
[2] Computed from the resultants for the seasons.

(Nos. 29 to 32.) **Southeastern Louisiana.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
29. Aggregate at all stations.[1] Surface winds.	Spring	825	1014	1190	1111	1146	804	587	712	45	S. 66° 16′ E.	.15		
	Summer	402	456	759	1003	741	918	436	384	113	S. 21 29 E.	.23		
	Autumn	904	1175	1000	713	368	359	287	595	63	N. 53 9 E.	.31		
	Winter	1087	1421	1130	748	703	586	530	1010	58	N. 40 55 E.	.21		
	The year[3]	...	...	...	...	...	...	...	...	...	N. 84 1 E.	.15½		
Motion of clouds.	Spring	19	11	5	14	61	56	64	16	...	S. 51 52 W.	.48	S. 49° W.	.23
	Summer	34	44	68	19	39	40	60	12	...	S. 65 43 E.	.05½	N. 64 E.	.28½
	Autumn	11	8	9	11	20	16	29	13	...	S. 63 57 W.	.26	N. 41 W.	.04
	Winter	26	16	23	13	43	52	54	21	...	S. 59 21 W.	.29	S. 86 E.	.05
	The year[3]	...	...	...	...	...	...	...	...	...	S. 54 19 W.	.25		
The two combined.	Spring	844	1025	1195	1125	1207	860	651	728	45	S. 60 58 E.	.14	S. 12 W.	.08½
	Summer	436	500	827	1022	780	958	496	396	113	S. 22 5 E.	.21½	S. 15 W.	.23
	Autumn	915	1183	1009	724	388	375	316	608	63	N. 52 57 E.	.30½	N. 31 E.	.20
	Winter	1113	1437	1153	761	746	638	584	1031	58	N. 38 48 E.	.19	N. 9½ W.	.14
	The year[3]	...	...	...	...	...	...	...	...	...	N. 83 48 E.	.14½		
30. New Orleans in the years 1854, 1855, 1856 and 1857.[2] Surface wind. No. of observations.	Spring	78	93	131	104	113	51	63	53	...	S. 72 49 E.	.200	S. 16 W.	.05
	Summer	51	51	61	104	128	28	34	18	...	S. 40 34 E.	.308	S. 1½ W.	.22
	Autumn	66	66	53	58	38	13	24	22	...	N. 66 29 E.	.284	N. 23 E.	.14
	Winter	131	121	102	91	91	33	49	79	...	N. 53 57 E.	.218	N. 12 W.	.14
	The year[3]	...	...	...	...	...	...	...	...	...	S. 86 28 E.	.207		
No. of miles.	Spring	706	824	633	475	478	228	275	545	...	N. 46 15 E.	.237	S. 72 W.	.05
	Summer	286	437	299	503	527	136	102	85	...	S. 65 21 E.	.298	S. 10½ E.	.31
	Autumn	492	513	272	238	126	62	119	157	...	N. 39 47 E.	.373	N. 12 E.	.11
	Winter	1179	1090	488	453	332	146	216	772	...	N. 22 16 E.	.394	N. 20 W.	.20
	The year[3]	...	...	...	...	...	...	...	...	...	N. 46 54 E.	.277		
Mean velocity.	Spring	9.05	8.86	4.83	4.57	4.23	4.47	4.37	10.28					
	Summer	5.61	8.57	4.90	4.84	4.12	4.86	3.00	4.72					
	Autumn	7.45	7.77	5.13	4.10	3.32	4.77	4.96	7.14					
	Winter	9.00	9.01	4.78	4.82	3.65	4.42	4.41	9.77					
	The year[3]													
Motion of clouds.	Spring	10	8	4	5	45	50	59	12	...	S. 56 20 W.	.56	S. 55 W.	.29
	Summer	27	27	54	15	35	28	50	11	...	S. 27 56 E.	.05½	N. 69 E.	.27
	Autumn	10	7	7	8	12	14	20	9	...	S. 71 31 W.	.22½	N. 12 E.	.08
	Winter	26	16	23	13	43	52	54	21	...	S. 59 22 W.	.29	S. 83 W.	.02
	The year[3]	...	...	...	...	...	...	...	...	...	S. 57 25 W.	.27		
31. New Orleans, entire period.	Spring	194	480	289	387	310	321	127	302	44	S. 79 13 E.	.14	S. 22 W.	.06
	Summer	131	213	244	482	240	457	127	124	113	S. 20 17 E.	.27	S. 16 W.	.30
	Autumn	223	535	260	284	86	168	85	248	57	N. 51 6 E.	.30½	N. 25 E.	.18
	Winter	321	684	310	303	194	195	144	432	58	N. 36 43 E.	.27	N. 2 E.	.18
	The year[3]	...	...	...	...	...	...	...	...	...	N. 78 25 E.	.16		
32. Fort Jackson.	Spring	1	13	20	27	7	12	6	6	...	S. 55 44 E.	.39		
	Summer	2	19	10	26	10	20	0	5	...	S. 45 41 E.	.36½		
	Autumn	10	27	11	15	13	9	1	5	...	N. 84 54 E.	.33		
	Winter	8	17	10	16	12	13	8	7	...	S. 56 2 E.	.15		
	The year	21	76	51	84	42	54	15	23	...	S. 62 50 E.	.29		

[1] Except Fort Jackson.
[2] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	6.07	5.00	5.82	6.68	5.89
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.21	1.54	1.65	1.46	1.22
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.44	1.49	2.17	2.63	1.63
Excess of the latter over the former	+.23	—.05	+.52	+1.17	+.41

[3] Computed from the resultants for the seasons.

(No. 33.) **Eastern Texas, Louisiana and Florida.**

Place of observation.	Time of the year.	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.	Direction of resultant.	Ratio of result'nt to sum of winds.	No. of days.
33. Latitude 29° to 30°.[1]	January	27	60	12	33	41	21	25	29	...	N. 58° 18′ E.	.08	248
	February	19	43	9	55	25	40	13	22	...	S. 38 16 E.	.16	217
	March	9	49	26	68	13	40	19	24	...	S. 57 7 E.	.21	248
	April	16	53	19	51	20	44	22	15	...	S. 51 18 E.	.15	240
	May	52	169	79	219	117	136	60	58	35	S. 45 7 E.	.24	308
	June	8	51	18	64	35	35	15	15	...	S. 44 9 E.	.28	240
	July	0	47	18	77	32	41	23	9	...	S. 35 43 E.	.33	247
	August	5	41	26	68	18	40	39	11	...	S. 28 35 E.	.25	248
	September	39	148½	84½	147	43	64	34	30	32	S. 81 49 E.	.31½	311
	October	13	106	20	34	15	24	21	15	...	N. 58 51 E.	.33	248
	November	17	54	26	46	15	14	26	44	...	N. 45 49 E.	.17	240
	December	18	54	21	47	26	15	18	42	...	N. 64 49 E.	.16	241

[1] Observed at Galveston, Texas, Attakepas and Fort Jackson, Louisiana, and Apalachicola, St. Augustine and Fort King, in Florida, for an aggregate period of 8⅓ years.

(Nos. 34 to 42.) **Florida,** latitude 29° to 30°.

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Apalachicola,	....	0	1	1843.
Atsena,	Augustus Steele,	6	3	1854 to 1861 inclusive, except 1860.
Cedar Keys,	Post Surgeon,	1	0	1842.
Fairview,	....	0	7	1869.
Fort Fanning,	Post Surgeon,	0	1	January, 1843.
Fort King,	Post Surgeon,	5	2	1833 to 1835 and 1841 to 1843, both inclusive.
Fort Marion,	Post Surgeon,	16	9	1825, 1826, 1828, 1830 to 1833, 1837 to 1839, 1841 to 1846, all inclusive, 1849, 1851 and 1852.
Fort Shannon,	Post Surgeon,	0	11	1843, 1849 and 1850.
Gainesville,	Jas. B. Bailey,	4	11	1856 to 1861 inclusive.
Gordon,	P. C. Garvin, M.D., and H. B. Scott,	0	9	1866, 1867 and 1868.
Micanopy,	Dr. Jas. B. Bean,	1	9	1858, 1859 and 1860.
Ocala,	Edward Barker,	1	1	1868 and 1869.
Pilatka,	W. M. L. Fiske,	0	4	1862.
St. Augustine,	J. Rodiman,	1	0	1835.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
34. Cedar Keys.	Spring	0	20	10	28	19	68	17	22	...	S. 32° 42′ W.	.76½			
	Summer	6	18	17	31	28	71	11	2	...	S. 7 49 W.	.44			
	Autumn	6	56	32	20	4	17	20	27	...	N. 45 1 E.	.27			
	Winter	26	57	7	24	8	14	4	40	...	N. 20 0 E.	.36			
	The year	38	151	66	103	59	170	52	91	...	S. 11 55 E.	.06	....	...	365
35. Fort King	January	42	49	23	48	52	77	23	27						
	February	42	46	20	31	44	71	20	33						
	March	16	19	20	27	23	75	25	20						
	April	22	22	14	10	15	82	31	15						
	May	18	36	22	8	31	52	27	22						
	June	22	17	21	22	43	58	14	14						
	July	6	37	17	40	45	50	18	3						
	August	16	41	17	32	38	41	29	3						
	September	13	42	33	10	35	53	18	6						
	October	23	62	24	13	19	38	25	11						
	November	26	24	36	15	27	37	35	13						
	December	30	29	26	19	44	29	13	26						
	Spring	56	77	56	45	69	209	83	57	...	S. 53 18 W.	.23	S. 89° W	.14	
	Summer	44	95	55	94	126	149	61	20	...	S. 2 42 E.	.27	S. 22 E.	.14½	
	Autumn	62	128	93	33	81	128	78	30	...	S. 39 57 E.	.05	N. 37 E.	.12	
	Winter	114	124	69	98	140	177	56	86	...	S. 14 29 W.	.07½	N. 21 E.	.05	
	The year[1]	...	...	...	...	...	...	...	...	...	S. 17 10 W.	.14			

[1] Computed from the resultants for the seasons.

(Nos. 36 to 41.) **Florida.**—*Continued.*

Place and kind of observations	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
36. Cedar Keys and Fort King combined.	January	42	60	23	54	62	70	31	30	...	S. 2° 28′ E.	.12	....	...	186
	February	46	54	14	43	37	79	26	37	...	S. 39 25 W.	.12	....	...	168
	March	20	40	36	54	37	111	42	32	...	S. 26 12 E.	.25	....	...	186
	April	35	38	24	27	34	127	50	27	...	S. 55 9 W.	.30	....	...	180
	May	25	55	36	19	50	103	43	39	...	S. 50 53 W.	.19	....	...	185
	June	24	21	38	49	81	106	22	21	...	S. 10 4 W.	.38	....	...	180
	July	8	51	35	64	83	90	35	4	...	S. 5 51 E.	.39	....	...	185
	August	23	57	40	54	57	74	61	6	...	S. 0 52 E.	.21¼	....	...	186
	September	22	57	83	25	47	72	42	12	...	S. 41 27 E.	.17	....	...	180
	October	28	108	44	22	31	54	52	31	...	N. 29 50 E.	.13	....	...	185
	November	32	62	57	31	36	52	60	32	...	N. 41 48 E.	.01½	....	...	180
	December	43	58	42	37	62	44	23	61	...	N. 56 36 E.	.04	....	...	185
37. Fort Shannon.	Spring	41	83	35	39	45	42	22	51	...	N. 45 1 E.?	.13	....	...	90
	Summer	10	81	50	95	52	52	20	26	...	S. 61 39 E.?	.22	....	...	90
	Autumn	0	30	5	3	1	5	9	17	...	N. 8 12 E.??	.38	....	...	24
	Winter	31½	49	10½	25	14	59	19½	41½	...	N. 55 25 W.	.17	....	...	90
	The year[2]	...	...	...	...	...	...	...	...	...	N. 25 29 E.	.12	....	...	294
38. St. Augustine.	The year	83	68	11	27	91	22	14	4	...	N. 24 17 E.	.11	....	...	365
39. Fort Marion.	January	18	38	1	13	14	7	12	21	...	N. 9 27 E.	.26			
	February	7	31	3	34	11	9	8	10	...	S. 78 53 E.	.25			
	March	5	38	1	44	2	17	5	12	...	S. 81 52 E.	.27			
	April	2	38	5	41	6	14	6	7	...	S. 74 32 E.	.35			
	May	6	28	12	50	3	18	3	4	...	S. 65 12 E.	.43			
	June	4	41	2	40	4	12	10	7	...	S. 85 29 E.	.30			
	July	0	34	3	54	4	13	10	6	...	S. 61 5 E.	.38½			
	August	2	29	6	47	0	21	11	8	...	S. 54 48 E.	.28			
	September	6	56	1	41	0	10	0	6	...	N. 76 42 E.	.50			
	October	5	71	5	24	1	7	4	7	...	N 57 26 E.	.56			
	November	9	31	1	37	2	4	1	36	...	N. 37 58 E.	.26½			
	December	4	38	1	33	5	7	4	26	...	N. 56 13 E.	.24			
	The year	68	473	41	458	52	139	74	150	...	N. 79 19 E.	.25			
40. Fort Marion.	Spring	363	932	491	983	382	535	285	306	...	S. 76 33 E.	.23			
	Summer	86	810	433	1299	437	562	429	161	...	S. 35 7 E.	.28½			
	Autumn	405	1465	403	689	200	245	143	336	...	N. 59 12 E.	.41			
	Winter	509	1019	178	426	304	430	475	726	...	N. 6 20 W.	.20½			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 80 24 E.	.20			
41. Surface winds at Smithsonian Stations in 1854, '55, '56 & '57.[1] No. of observations.	Spring	158	406	189	138	96	307	276	313	...	N. 28 50 W.	.151	S. 80° W.	.12	
	Summer	75	233	315	344	108	372	308	238	...	S. 4 32 W.	.101	S. 27 W.	.26	
	Autumn	239	792	299	142	69	131	136	267	...	N. 36 45 E.	.426	N. 48 E.	.28	
	Winter	225	495	141	150	101	214	145	344	...	N. 7 8 E.	.246	N. 12½ W.	.09	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 18 19 E.	.163			
No. of miles.	Spring	995	3301	1219	993	890	2299	2442	2148	...	N. 39 14 W.	.144	S. 61 W.	.17	
	Summer	378	1263	1893	2015	633	2242	2487	1076	...	S. 21 7 W.	.139	S. 18 W.	.34	
	Autumn	1603	7830	1887	812	299	755	1107	1596	...	N. 37 18 E.	.530	N. 49 E.	.35	
	Winter	1543	4276	754	875	804	1280	1165	2897	...	N. 3 42 E.	.305	N. 18 W.	.11½	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 16 10 E.	.202			
M'n vel. in miles p.h'r.	Spring	6.30	8.13	6.45	7.20	9.27	7.49	8.85	6.86						
	Summer	5.04	5.42	6.01	5.86	5.86	6.03	8.07	4.52						
	Autumn	6.71	9.89	6.31	5.72	4.33	5.76	8.14	5.98						
	Winter	6.86	8.64	5.35	5.83	7.96	5.98	8.03	8.42						

[1] From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	7.59	6.01	7.66	7.49	7.19
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	1.15	.61	3.26	1.84	1.17
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	1.09	.84	4.06	2.28	1.45
Excess of the latter over the former	—.06	+.23	+.80	+.44	+.28

[2] Computed from the resultants for the seasons.

(No. 42.) **Florida.**—*Continued.*

Kind of observations	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
42. Aggregate number of observations at all stations. Surface winds.	Spring	769	1968	978	1467	773	1716	958	1243	122	N. 87° 18′ E.	.03½		
	Summer	286	1648	1254	2396	1032	1697	1127	703	196	S. 33 7 E.	.23		
	Autumn	1228	3593	1518	1159	574	873	750	1094	251	N. 47 46 E.	.34		
	Winter	1209½	2441	676½	1049	797	1470	847½	1790½	206	N. 3 13 E.	.15½		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 66 5 E.	.11½		
Motion of clouds.	Spring	90	421	131	213	78	374	206	265	...	N. 44 8 W.	.06½		
	Summer	100	460	386	591	114	491	281	273	...	S. 49 44 E.	.15		
	Autumn	138	850	332	243	91	253	128	213	...	N. 55 19 E.	.35		
	Winter	138	523	126	251	156	408	180	327	...	N. 67 24 W.	.01½		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 66 7 E.	.09½		
The two combined.	Spring	859	2389	1109	1680	851	2090	1164	1508	122	N. 17 8 E.	.01	S. 67° W.	.11½
	Summer	386	2108	1640	2987	1146	2188	1408	976	196	S. 35 31 E.	.21	S. 3 E.	.21½
	Autumn	1366	4443	1850	1402	665	1126	878	1307	251	N. 48 39 E.	.34	N. 41½ E.	.24
	Winter	1347½	2964	802½	1300	953	1878	1027½	2117½	206	N. 0 50 W.	.13½	N. 48 W.	.13
	The year[1]	...	...	...	...	...	...	...	...	...	N. 62 19 E.	.10½		

[1] Computed from the resultants for the seasons.

(Nos. 43 to 58.) **Florida,** latitude 25° to 29°.

Observed as follows, viz.:—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Cape Florida,	John Dubois,	1	0	1835.
Carysford Reef,	John Whalton,	1	0	1835.
Fort Brooke,	Post Surgeon,	24	6	1825 to 1828, 1830, 1831, 1838 to 1843 and 1845 to 1858, all inclusive.
Fort Dallas,	Post Surgeon,	3	7	1850 and 1855 to 1858 inclusive.
Fort Deynoud,	Post Surgeon,	2	1	1855 to 1858 inclusive.
Fort Hamer,	Post Surgeon,	0	5	1850.
Fort Meade,	Post Surgeon,	3	7	1851 to 1854 inclusive.
Fort Meyers,	Post Surgeon,	6	11	1851 to 1858 inclusive.
Fort Pierce,	Post Surgeon,	5	11	1851 to 1858 inclusive.
Manatee,	B. A. Coachman,	1	0	1869.
New Smyrna,	Post Surgeon,	0	10	1853.
Port Orange,	J. M. Hawks,	1	6	1867 and 1868.
Tampa Bay,	William Bunce,	1	0	1835.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
43. New Smyrna.	Spring	27	70	83	38	17	40	42	9	...	N. 82° 37′ W.?	.26	....	...	92
	Summer	1	17	122	57	28	35	50	3	...	S. 51 22 E.?	.40	....	...	92
	Autumn	6	74	57	29	15	14	25	8	...	N. 58 21 E.?	.40	....	...	61
	Winter	32	22	16	13	13	12	32	48	...	N. 31 25 W.?	.05	....	...	59
44. Port Orange.	Spring	73	64	58	65	108	35	117	29	0	S. 14 37 W.	.09½	S. 40½° W.	.17	
	Summer	14	31	41	38	72	21	42	2	2	S. 22 26 E.	.31½	S. 5 E.	.33	
	Autumn	63	40	73	19	19	5	24	29	1	N. 41 20 E.	.37	N. 31½ E.	.28	
	Winter	122	71	39	27	45	35	41	48	0	N. 4 12 E.	.27½	N. 17 W.	.24	
	The year[1]	...	...	...	...	...	...	...	...	...	N. 64 42 E.	.10			

[1] Computed from the resultants for the seasons.

(Nos. 45 to 51.) **Florida**, latitude 25° to 29°.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon Influences. Direction.	Force.	Number of days.
45. Eastern Florida, latitude 28° to 29°.[1]	Spring	100	134	141	103	125	75	159	38	0	S. 66° 15′ E.	.08½	S. 46½° W.	.10	
	Summer	15	48	163	95	100	56	92	5	2	S. 41 47 E.	.33½	S. 14 E.	.29½	
	Autumn	69	114	130	48	34	19	49	37	1	N. 60 22 E.	.38½	N. 58½ E.	.23	
	Winter	154	93	55	40	58	47	73	96	0	N. 8 35 W.	.27	N. 39 W.	.30½	
	The year[3]	...	...	...	...	...	...	...	...	...	N. 73 40 E.	.15½			
46. Tampa Bay.	Spring	15	10	3	4	2	4	3	17	3	N. 12 27 W.?	.38	....	...	92
	Summer	5	17	9	7	1	10	2	11	0	N. 21 29 W.?	.31	....	...	92
	Autumn	5	7	2	2	3	0	1	8	1	N. 4 48 E.?	.40	....	...	91
	Winter	9	9	5	5	2	5	6	16	2	N. 16 0 W.?	.31	....	...	90
	The year	34	43	19	18	8	19	12	53	6	N. 12 18 W.?	.33	....	...	365
47. Fort Brooke, 1825 to '28 and '30.	January	24	11	5	7	21	26	29	27	...	N. 9 17 E.	.10			
	February	5	28	8	21	9	35	21	16	...	S. 86 14 E	.12			
	March	7	19	6	25	11	35	33	19	...	S. 51 17	[illegible]			
	April	7	22	16	21	11	32	29	12	...	S. 30 23	.10			
	May	1	18	24	25	18	27	26	9	...	S. 3 56 E.	.14			
	June	1	8	35	21	18	28	27	12	...	S. 18 33 E.	.26			
	July	1	10	6	39	35	38	20	6	...	S. 8 21 E.	.35			
	August	2	15	13	34	22	33	21	15	...	S. 19 58 E.	.29			
	September	0	34	21	29	13	11	29	13	...	S. 80 46 E.	.25			
	October	2	30	24	17	9	25	30	18	...	N. 66 14 E.	.22			
	November	3	25	15	18	10	29	28	23	...	N. 55 2 E.	.15			
	December	3	25	15	22	16	11	41	22	...	N. 27 20 E.	.13			
48. Fort Brooke, 1825, to '28, '30, '31 & '38 to '58.	Spring	300	872	953	802	785	952	760	493	...	S. 64 18 E.	.14½			
	Summer	157	586	1141	1108	921	988	900	314	...	S. 17 51 E.	.28			
	Autumn	356	1741	1267	714	386	435	421	440	...	N. 70 24 E.	.36½			
	Winter	580	1421	835	624	510	630	448	759	...	N. 49 35 E.	.19			
	The year	1393	4620	4196	3248	2602	3005	2529	2006	...	S. 75 37 E.	.16			
49. Fort Meade.	January	127	45	30	16	8	15	87	34						
	February	58	37	54	29	47	27	56	31						
	March	57	27	59	24	46	23	92	28						
	April	48	30	66	24	33	31	80	19						
	May	57	42	78	26	44	22	61	15						
	June	26	45	122	47	52	20	84	11						
	July	26	15	156	67	62	9	69	6						
	August	33	23	135	69	57	22	83	5						
	September	64	58	151	23	38	23	68	12						
	October	118	98	91	27	26	5	31	19						
	November	103	43	48	16	21	16	39	35						
	December	54	39	55	28	7	19	41	34						
	Spring	162	99	203	74	123	76	233	62	...	N. 6 24 W.	.04½			
	Summer	85	83	413	183	171	51	236	22	...	S. 60 32 E.	.29			
	Autumn	285	199	290	66	85	44	138	66	...	N. 40 12 E.	.34½			
	Winter	239	121	139	73	62	61	184	99	...	N. 5 ½ W.	.24½			
	The year[3]	...	...	...	...	...	...	...	...	...	N. 47 39 E.	.15½			
50. Western Florida, latitude 27° to 28°.[2]	Spring	509	1020	1234	910	938	1094	1053	616	3	S. 26 2 E.	.10½	S. 50° W.	.14	
	Summer	266	742	1771	1382	1127	1120	1213	385	0	S. 28 45 E.	.26	S. 6½ W.	.22½	
	Autumn	690	2029	1663	800	485	501	596	561	1	N. 64 17 E.	.35	N. 46 E.	.23	
	Winter	883	1619	1022	732	587	728	659	929	6	N. 38 42 E.	.19	N. 12½ W.	.15½	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 88 0 E.	.15			
51. Fort Pierce.	Spring	174	250	236	385	267	164	276	123	...	S. 43 21 E.	.16	S. 17½ W.	.08½	
	Summer	39	100	343	468	294	175	219	23	...	S. 31 46 E.	.44	S. 15 E.	.35	
	Autumn	220	503	418	190	173	83	147	177	...	N. 59 51 E.	.35	N. 38 E.	.26½	
	Winter	387	214	156	237	147	176	283	362	...	N. 27 26 W.	.20½	N. 47 W.	.32	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 76 11 E.	.11½			

[1] Observed at New Smyrna and Fort Orange.
[2] Observed at Manatee, Tampa Bay, and Forts Brooke, Hamer and Meade.
[3] Computed from the resultants for the seasons.

(Nos. 52 to 58.) **Florida.**—*Continued.*

Place of observation.	Time of the year.	Relative prevalence of winds from the different points of the compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
52. Fort Meyers.	January	213	103	80	46	45	34	89	79						
	February	139	102	84	53	80	23	104	41						
	March	161	65	62	52	78	78	113	72						
	April	148	56	53	55	93	72	152	58						
	May	125	93	96	49	65	78	139	44						
	June	85	61	86	73	63	54	114	31						
	July	61	49	112	70	80	67	102	27						
	August	85	60	90	74	101	76	91	47						
	September	152	144	142	49	53	34	60	22						
	October	223	131	67	41	38	19	98	65						
	November	200	139	95	36	63	31	75	57						
	December	175	104	93	58	95	26	78	56						
	Spring	434	214	211	156	236	228	404	174	...	N. 47° 9′ W.	.14			
	Summer	231	170	288	217	244	197	307	105	...	S. 20 16 E.	.07			
	Autumn	575	414	304	126	154	84	233	144	...	N. 23 37 E.	.36			
	Winter	527	309	257	157	220	83	271	176	...	N. 25 49 E.	.27			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 16 31 E.	.05			
53. Fort Deynoud.	Spring	106	174	84	106	50	78	56	80	...	N. 47 17 E.	.21			
	Summer	17	171	55	37	17	47	20	11	...	N. 67 21 E.	.41			
	Autumn	121	39	127	7	25	8	24	11	...	N. 45 33 E.	.47			
	Winter	180	57	141	43	58	23	70	54	...	N. 29 30 E.	.28			
	The year[2]	...	...	...	...	...	...	...	...	...	N. 48 51 E.	.33½			
54. South-western Florida.[1]	Spring	540	388	295	262	286	306	460	254	...	N. 18 20 W.	.11½	S. 63½° W.	.12½	
	Summer	248	341	343	254	261	244	327	116	...	S. 77 1 E.	.09	S. 3 E.	.18½	
	Autumn	696	453	431	133	179	92	257	155	...	N. 27 42 E.	.37	N. 31 E.	.19	
	Winter	707	366	398	20[illegible]	278	106	341	230	...	N. 19 6 E.	.25½	N. 3½ E.	.08	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 24 51 E.	.08½			
55. Fort Dallas.	Spring	73	201	189	152	132	62	125	72	...	S. 85 29 E.	.22			
	Summer	1	114	279	166	110	22	59	7	...	S. 87 13 E.	.52½			
	Autumn	98	490	168	163	67	46	100	45	...	N. 84 42 E.	.40			
	Winter	116	191	160	151	99	41	36	104	...	N. 71 6 E.	.31			
	The year[2]	...	...		...	...	...	...	...	...	N. 88 19 E.	.36			
56. Cape Florida.	Spring	3	14	7	25	21	2	3	17	...	S. 29 21 E.	.40			
	Summer	2	0	9	39	18	12	4	8	...	S. 24 38 E.	.55½			
	Autumn	4	21	16	15	8	7	7	13	...	N. 77 32 E.	.23			
	Winter	6	9	7	17	11	3	5	32	...	N. 66 4 W.	.12			
	The year	15	44	39	97	58	24	19	70	...	S. 47 59 E.	.20	....	...	365
57. South-eastern Florida.	Spring	76	215	196	177	153	64	128	89	...	S. 82 12 E.	.22	S. 71 W.	.12	
	Summer	3	114	288	205	128	34	63	15	...	S. 64 1 E.	.54	S. 31 E.	.29	
	Autumn	102	511	184	178	75	53	107	58	...	N. 61 13 E.	.44	N. 13½ E.	.20	
	Winter	122	200	167	168	110	44	41	136	...	N. 68 57 E.	.28	N. 41 W.	.12	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 87 43 E.	.33			
58. Carysford Reef.	Spring	10	20	15	18	12	5	2	4	6	S. 89 30 E.?	.36			
	Summer	2	15	21	22	16	7	1	2	6	S. 60 32 E.?	.49			
	Autumn	9	31	15	13	2	7	2	11	1	N. 54 17 E.?	.42			
	Winter	10	15	16	12	4	6	7	18	2	N. 33 45 E.?	.23			
	The year[2]	31	81	67	65	34	25	12	35	51	N. 82 25 E.	.32	....	...	365

[1] Observed at Fort Meyers and Deynoud. [2] Computed from the resultants for the seasons.

(No. 59.) **Northern Bahamas.**

Computed from observations made for an aggregate period of over four years, in the years 1841, 1842, 1843, 1845, 1858 and 1859. A part, and perhaps all, of them were made by A. M. Smith, at Nassau, on the island of New Providence.

Place of observation.	Time of the year.	Relative prevalence of winds from the different points of the compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
59. Northern Bahamas.	Spring	35	287	81	183	43	56	13	57	40	N. 78° 19′ E.	.42	N. 39° W.	.06	183
	Summer	13	200	192	452	75	40	4	10	92	S. 66 52 E.	.62	S. 23 E.	.30	154
	Autumn	41	222	48	105	23	21	4	26	26	N. 66 36 E.	.51	N. 6 E.	.16	148
	Winter	34	256	112	174	31	55	19	96	43	N. 72 45 E.	.37	N. 52 W.	.12	191
	The year[1]	...	...	...	...	...	...	...	...	...	N. 87 0 E.	.45	....	...	676

[1] Computed from the resultants for the seasons.

(Nos. 60 to 70.) **Atlantic Ocean.**

Computed from observations for an aggregate period of nearly 10 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
60. Long. 70° to 80° W.	Spring	18	11	35	11	37	17	26	15	26	8	12	5	12	12	13	6	8	S. 84° 40′ E.	.24	N. 88° E.	.02	91
	Summer	2	1	12	14	27	18	31	14	12	6	18	2	4	0	8	0	17	S. 52 8 E.	.48	S. 24½ E.	.30	62
	Autumn	20	10	35	11	15	14	7	10	7	6	6	2	0	2	6	2	17	N. 65 5 E.	.39	N. 26½ E.	.21	57
	Winter	15	17	19	20	39	10	27	7	21	7	16	16	24	13	28	16	9	N. 48 12 E.	.08	N. 69 W.	.21	101
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 29 E.	.26	....	...	311
61. Long. 65° W. to 70° W.	Spring	17	20	72	26	50	16	46	29	19	29	36	9	21	6	30	12	21	S. 85 15 E.	.21	N. 71⅓ W.	.05	153
	Summer	5	5	19	19	22	21	40	7	17	10	25	3	3	2	4	0	8	S. 53 42 E.	.43	S. 21½ E.	.24	70
	Autumn	17	24	37	21	22	13	30	5	8	7	10	3	3	0	6	2	12	N. 74 7 E.	.43	N. 46 E.	.22	73
	Winter	22	20	67	19	30	18	35	7	24	15	41	13	11	2	26	18	16	N. 76 58 E.	.14	N. 60½ W.	.14½	128
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 83 4 E.	.26	....	...	424
62. Long. 60° W. to 65° W.	Spring	37	44	132	42	72	31	106	32	55	28	58	19	37	16	21	17	18	S. 83 36 E.	.26	N. 17⅓ W.	.02	255
	Summer	1	2	48	29	67	45	91	23	19	16	27	6	22	6	5	2	16	S. 60 27 E.	.49	S. 39½ E.	.25	142
	Autumn	14	23	60	18	32	28	41	9	14	14	35	4	11	0	19	4	18	N. 89 44 E.	.29	N. 27½ E.	.05	115
	Winter	32	32	62	17	32	32	33	15	27	17	33	9	20	11	35	16	30	N. 53 6 E.	.15	N. 48 W.	.19	151
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 37 E.	.27	....	...	663
63. Long. 50° to 60° W.	Spring	17	21	42	19	44	25	97	13	34	14	30	11	24	9	32	17	14	S. 69 5 E.	.23	S. 80⅓ W.	.08	154
	Summer	5	7	48	32	66	39	50	10	14	6	33	3	6	0	0	2	14	S. 75 40 E.	.53	S. 74½ E.	.22	112
	Autumn	9	7	39	32	28	51	42	18	19	16	15	5	6	5	3	3	20	S. 69 52 E.	.46	S. 57 E.	.16	106
	Winter	14	7	21	7	17	5	15	3	7	4	17	7	14	10	10	8	4	N. 14 21 E.	.09	N. 59½ W.	.31	57
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 76 38 E.	.30	....	...	429
64. Long. 45° to 80° W.	January	37	19	68	24	47	27	39	8	20	8	48	14	27	20	38	21	16	N. 42 50 E.	.15	....	...	160
	February	25	17	47	27	41	23	31	17	28	22	28	19	25	9	39	24	29	N. 55 7 E.	.10	....	...	150
	March	48	22	66	18	50	20	58	18	41	22	54	27	35	32	45	15	8	N. 74 23 E.	.03	....	...	196
	April	28	48	118	47	69	26	87	21	41	21	43	12	45	7	35	22	24	N. 78 31 E.	.25	....	...	231
	May	13	26	97	35	95	44	134	50	60	36	40	8	15	6	19	16	19	S. 63 52 E.	.43	....	...	238
	June	2	1	40	22	38	32	77	29	22	14	50	10	9	4	9	0	12	S. 43 17 E.	.44	....	...	124
	July	3	3	39	36	97	53	67	14	26	14	33	2	7	3	1	2	14	S. 67 2 E.	.57	....	...	138
	August	9	11	50	40	65	49	80	15	15	11	22	5	20	4	8	2	26	S. 74 51 E.	.47	....	...	144
	September	8	16	49	19	28	21	41	9	15	17	17	3	6	0	11	2	33	S. 81 43 E.	.35	....	...	98
	October	16	15	56	25	59	42	56	25	26	23	34	4	7	7	11	3	22	S. 69 14 E.	.39	....	...	144
	November	37	36	70	55	28	51	30	11	9	4	20	11	10	0	13	6	12	N. 66 16 E.	.45	....	..	134
	December	23	42	60	20	41	21	44	8	34	13	34	14	20	9	29	14	17	N. 70 26 E.	.02	....	...	148
	The year	249	256	760	368	658	409	744	225	337	205	423	129	226	101	258	127	242	S. 79 4 E.	.28	....	...	1905
65. Long. 40° to 50° W.	Spring	4	5	2	11	24	22	9	9	12	7	9	6	3	11	7	6	6	S. 56 28 E.	.26	....	...	51
	Summer	5	11	26	69	48	37	19	9	1	3	3	5	3	10	4	2	17	N. 78 23 E.	.58	....	...	91
	Autumn	3	25	23	63	42	22	13	21	9	14	13	5	3	11	1	1	2	N. 81 1 E.	.48	....	...	90
	Winter	6	12	11	37	15	27	10	7	5	7	12	12	7	10	8	5	7	N. 88 48 E.	.21	....	...	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 32 E.	.34	....	...	298
66. Long. 35° W. to 40° W.	Spring	4	16	23	45	14	31	8	8	15	22	5	9	6	5	6	13	15	N. 87 32 E.	.32	....	...	82
	Summer	5	18	32	71	22	24	10	13	7	14	6	7	0	3	1	14	13	N. 76 11 E.	.50	....	...	87
	Autumn	6	28	36	49	33	42	8	29	19	36	3	15	2	21	8	9	16	S. 84 39 E.	.31	....	...	120
	Winter	2	19	30	39	21	24	20	19	10	20	10	14	1	18	3	4	9	S. 80 31 E.	.22	....	...	121
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 9 E.	.35	....	...	410
67. Long. 30° W. to 35° W.	Spring	6	8	4	32	5	9	8	12	16	12	15	19	1	3	10	16	2	S. 34 10 E.	.09	....	...	59
	Summer	11	44	15	48	25	17	9	12	7	19	5	13	3	7	11	20	8	N. 55 18 E.	.33	....	...	91
	Autumn	5	24	19	61	18	20	16	33	17	31	9	17	0	20	8	14	20	S. 76 51 E.	.23	....	...	111
	Winter	8	13	12	31	14	29	22	37	14	25	7	4	3	11	5	13	9	S. 58 31 E.	.33	....	...	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 12 E.	.34	....	...	347
68. Long. 25° W. to 30° W.	Spring	13	13	20	29	13	8	4	6	9	5	3	6	0	5	4	13	4	N. 52 47 E.	.40	....	...	52
	Summer	26	145	10[illegible]	65	38	10	1	3	5	5	3	8	9	6	1	31	8	N. 36 39 E.	.71	....	...	155
	Autumn	9	40	13	20	10	22	6	16	9	15	10	12	11	22	16	20	33	N. 13 39 E.	.14	....	...	95
	Winter	12	12	17	35	17	17	11	10	17	15	10	9	5	18	5	12	3	N. 83 6 E.	.19	....	...	75
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 45 47 E.	.33	....	...	377
69. Long. 15° to 25° W.	Spring	4	28	14	12	3	11	0	7	1	11	1	6	2	5	4	13	2	N. 31 58 E.	.34	....	...	41
	Summer	25	158	46	47	17	6	4	7	0	4	5	16	4	8	7	21	8	N. 28 14 E.	.66	....	...	128
	Autumn	6	57	33	18	6	12	3	2	9	7	3	2	7	9	3	16	4	N. 32 3 E.	.49	....	...	66
	Winter	4	41	19	37	13	23	11	9	6	4	1	6	5	12	4	14	7	N. 55 48 E.	.43	....	...	72
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 35 56 E.	.47	....	...	307
70. Long. 15° to 45° W.	January	12	34	24	69	20	31	27	27	7	24	9	16	7	25	7	18	13	N. 78 26 E.	.19	S. 27¼ W.	.10	123
	February	15	26	12	39	15	16	14	7	8	13	8	10	9	24	5	16	8	N. 43 35 E.	.11	S. 74 W.	.16	82
	March	8	23	15	30	6	28	11	12	18	20	12	20	3	9	15	23	17	N. 80 19 E.	.03	S. 60 W.	.23	90
	April	16	24	24	46	22	31	6	23	14	22	14	7	2	8	7	22	6	N. 79 39 E.	.08	S. 55 W.	.18	98
	May	8	23	24	51	20	20	8	7	13	15	6	16	6	10	6	15	6	N. 67 39 E.	.08	S. 59¾ W.	.18	85
	June	20	96	40	67	26	29	16	20	10	29	8	19	4	17	11	46	21	N. 42 48 E.	.35	N. 3⅓ E.	.11	160
	July	32	155	144	140	48	31	8	8	5	9	3	13	12	7	11	36	18	N. 44 35 E.	.67	N. 34¼ E.	.43	227
	August	19	125	35	89	57	23	7	12	4	6	9	14	3	7	1	6	12	N. 53 11 E.	.61	N. 50¼ E.	.36	143
	September	10	58	29	68	28	30	12	34	4	28	11	15	5	18	10	17	15	N. 62 36 E.	.33	N. 63¾ E.	.07	131
	October	12	41	45	62	37	34	12	32	24	28	8	16	8	24	9	29	20	N. 73 31 E.	.27	S. 32¼ E.	.06	147
	November	7	72	46	64	26	46	15	32	33	46	14	16	7	41	15	14	40	N. 78 50 E.	.20	S. 21½ W.	.09	178
	December	3	35	47	63	34	67	29	47	34	34	20	17	2	17	6	13	11	S. 70 27 E.	.38	S. 27¼ E.	.28	160
	The year	162	712	485	788	339	386	165	261	174	274	122	179	68	207	103	255	187	N. 62 53 E.	.26	....	...	1624

[1] Computed from the resultants for the seasons.

(No. 71.) **Teneriffe, Canary Islands.**

Observed on board the brig Ocean during the month of December, 1820, partly while lying at anchor at Teneriffe, and partly between there and the Madeiras, as follows:—

North 14, N. E. 120, E. N. E. 60, East 122, S. E. 14, calm or variable 174.

Direction of resultant, N. 67° 34′ E.

Ratio of resultant to sum of winds, including calms, .58.

(Nos. 71(*a*) to 75.) **Sahara Desert, Egypt, and Mount Sinai.**

Observed at the following places, viz.:—

Cassier, in Upper Egypt, by Lefebore, for five days in April, 1839.

Dakhel, *Farafeh*, *Fayoum*, *Khargeh*, *Garah*, *Qasr (Cossier)*, *Siwah*, *Zaboon*, and the intervening deserts in Western Egypt, by Frederick Cailliaud, from November 12, 1819, to March 19, 1820.

Gournah, by Frederick Cailliaud, from May 26 to July 14, 1820, except 4 days, and from July 1 to August 31, 1822, except 6 days.

Mount Sinai, by Dr. Joseph Dickinson, and Frederick Hubbard, from March 26 to April 20, 1857.

Mourzouk, Sahara, for six months, by Gerhard Rohlfs, date not known.

River Nile, between latitude 27° and 30°, from January 1 to 15, and from March 4 to 14; and between latitude 24° to 27° in Upper Egypt, from January 16 to 26, and from February 13 to March 4, all inclusive, and in the year 1857.

Suez, by officers of the Telegraph Station, for two years, from June 1, 1866, to May 31, 1868, six times a day, viz.: 6 A. M., 9 A. M., Noon, 3, 6, and 9 P. M.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
71(*a*). Mourzouk.	March	3	3	10	3	11	7	8	3	52	S. 40° 21′ W.	.14			
	October November	24	15	15	14	26	5	11	10	74	N. 81 50 W.	.07			
	Winter	26	10	15	4	7	15	42	32	150	N. 54 59 W.	.20			
72. Western Egypt.	Spring	13	1	4	0	1	-3	6	7	15	N. 28 17 W.	.35	S. 9½° W.	.16	25
	Summer	124	3	2	0	0	0	13	0	46	N. 4 1 W.	.67	N. 25 E.	.20	94
	Autumn	20	0	0	1	0	0	4	1	7	N. 11 18 W.	.62	N. 5 E.	.04	17
	Winter	44	6	6	2	1	7	31	22	64	N. 35 14 W.	.38	S. 26 W.	.19	91
	The year[1]	...	...	...	...	...	...	...	...	...	N. 16 16 W.	.49½			
73. River Nile, lat. 27°–30°.	Spring	5	0	0	0	0	0	2	8	6	N. 35 42 W.???	.63	....	...	11
	Winter	8	0	0	0	7	0	2	7	6	N. 49 26 W.???	.30	....	...	15
73(*a*). Suez.	Spring	36	3	1	2	12	6	4	36	...	N. 32 25 W.	.54	S. 24 E.	.14	
	Summer	43	1	0	0	2	4	1	49	...	N. 27 25 W.	.82½	N. 11 W.	.15	
	Autumn	43	1	1	1	3	2	3	46	...	N. 25 18 W.	.79	N. 6½ E.	.13	
	Winter	33	3	1	2	6	11	11	33	...	N. 41 44 W.	.58	S. 13 W.	.15	
	The year	155	8	3	5	23	23	19	164	...	N. 30 45 W.	.68			
74. Up. Egypt: Cossier and Valley of Nile, lat. 24° to 27°.	Spring	4	2	2	0	0	2	0	2	5	N. 6 14 E.???	.32	....	...	4
	Winter	26	0	2	0	2	4	2	14	4	N. 19 7 W.??	.72	....	...	27
75. Mount Sinai.	Spring	4	15	0	0	7	14	0	7	5	N. 57 54 W.??	.10	....	...	26

[1] Computed from the resultants for the seasons.

(No. 76.) **Persian Gulf.**

Computed from observations for an aggregate period of 145 days, collected and classified from the logs of different sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent, as follows, viz.:—

Spring, North 2, N. E. 1, East 2, S. E. 4, S. W. 4, W. S. W. 1, West 4, W. N. W. 2, N. W. 6, calm 2.

Direction of resultant N. 78° 29′ W.

Ratio of resultant to sum of winds .30.

Number of days 28.

Autumn, East 10, E. S. E. 2, S. E. 1, S. S. E. 10, South 6, S. S. W. 3, S. W. 14, W. S. W. 8, West 5, W. N. W. 2, N W. 10, N. N. W. 4, calm 3.

Direction of resultant S. 24° 11′ W.

Ratio of resultant to sum of winds .38.

Number of days 78.

Winter, East 4, S. E. 4, W. S. W. 3, West 8, W. N. W. 5, N. W. 5, N. N. W. 2, calm 2.

Direction of resultant N. 53° 19′ W.

Ratio of resultant to sum of winds .39.

Number of days 39.

(Nos. 77 to 97.) **India.**

Observed at the following places, viz.:—

Agra, during the years 1865 to 1869 inclusive.

Ajmere, during the years 1869 and 1871.

Allahabad, during the year 1871.

Bareilly, during the years 1869 and 1871.

Benares, during the years 1864 to 1869 inclusive, and the year 1871, excepting the month of September.

Bhawulpoor, for the months of August and September, 1871.

Chuckrata, during the year 1869 and the months of October, November, and December, 1871.

Futtehgurh, during the years 1869 and 1871.

Futtehpore and *Patna,* and along the river Ganges between these points, from May to December inclusive, in the year 1826.

Goruckpore, during the years 1869 and 1871.

Jahnsie, during the year 1869 and the first eleven months of 1871.

Lucknow, during the year 1869 and January, February, April, and October, 1871.

Meerut, during the years 1869 and 1871.

Mozufferepore, by T. Dashwood, from December, 1832, to February, 1833, inclusive.

Patna (see Futtehpore above).

Raneekhet, during the year 1871.

Roorkee, during the years 1864 to 1869 inclusive, and 1871.

Sukkur, from May to September inclusive, in the year 1844

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N.E. or between N. & E.	East.	S. E or between S & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
77. Sukkur.	May	20	0	28	2	52	3	5	3	...	S. 0° 2′ E.??	.36	....	...	31
	Summer	9	4	5	32	196	23	3	4	...	S. 2 10 E.?	.80	....	...	92
	September	14	0	0	6	25	0	3	1	...	S. 2 8 E.??	.30	....	...	30
77(*a*). Bhawulpoor.	August	2	8	1	0	44	3	1	2	...	S. 3 27 E.	.61			
	September	6	0	0	0	41	7	1	4	...	S. 12 58 W.	.64½			

(Nos. 78 to 80.) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
78. Ajmere, 1869 and 1871.	Spring	14	19	0	3	17	94	13	22	1	S. 64° 48′ W.	.48	S. 72° W.	.24
	Summer	6	11	1	8	14	117	24	2	1	S. 47 3 W.	.70	S. 42 W.	.46
	Autumn	32	46	4	15	26	36	16	4	3	N. 28 20 E.	.03	N. 53 E.	.26
	Winter	42	47	4	17	21	23	7	9	10	N. 46 43 E.	.17	N. 52 E.	.42
	The year	94	123	9	43	78	270	60	37	15	S. 57 27 W.	.24½		
78(*a*). Ajmere.[1]	January	...	...	...	...	...	...	...	...	...	N. 8 0 W.			
	February	...	...	...	...	...	...	...	...	...	S. 80 0 W.			
	March	...	...	...	...	...	...	...	...	...	S. 61 0 W.			
	April	...	...	...	...	...	...	...	...	...	S. 69 0 W.			
	May	...	...	...	...	...	...	...	...	...	S. 57 0 W.			
	June	...	...	...	...	...	...	...	...	...	S. 59 0 W.			
	July	...	...	...	...	...	...	...	...	...	S. 43 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. 41¼ 0 W.			
	September	...	...	...	...	...	...	...	...	...	S. 67 0 W.			
	October	...	...	...	...	...	...	...	...	...	S. 77 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 47 0 E.			
	December	...	...	...	...	...	...	...	...	...	N. 32 0 E.			
78(*b*). Raneekhet.	January	...	...	...	...	...	...	...	...	...	N. 9 0 E.			
	February	...	...	...	...	...	...	...	...	...	S. 87 0 W.			
	March	...	...	...	...	...	...	...	...	...	S. 17 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 58 0 W.			
	May	...	...	...	...	...	...	...	...	...	S. 57 0 W.			
	June	...	...	...	...	...	...	...	...	...	S. 60 0 W.			
	July	...	...	...	...	...	...	...	...	...	S. 44 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. 60 0 W.			
	September	...	...	...	...	...	...	...	...	...	S. 38 0 W.			
	October	...	...	...	...	...	...	...	...	...	S. 51 0 W.			
	November	...	...	...	...	...	...	...	...	...	S. 61 0 W.			
	December	...	...	...	...	...	...	...	...	...	S. 49 0 W.			
79. Meerut.	Spring	1	7	3	22	2	23	4	78	36	S. 47 26 W.	.09		
	Summer	0	19	23	6	0	7	6	45	58	N. 3 18 W.	.22		
	Autumn	1	16	21	4	0	5	1	41	93	N. 3 6 W.	.17		
	Winter	1	7	0	8	5	19	41	57	42	N. 81 46 W.	.48		
	The year	3	49	47	40	7	54	52	221	229	N. 48 36 W.	.26		
79(*a*). Meerut.[1]	January	...	...	...	...	...	...	...	...	...	N. 52 0 W.			
	February	...	...	...	...	...	...	...	...	...	N. 43 0 W.			
	March	...	...	...	...	...	...	...	...	...	N. 46 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 49 0 W.			
	May	...	...	...	...	...	...	...	...	...	N. 11 0 E.			
	June	...	...	...	...	...	...	...	...	...	N. 40 0 E.			
	July	...	...	...	...	...	...	...	...	...	N. 78 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. 67½ 0 E.			
	September	...	...	...	...	...	...	...	...	...	N. 86 0 W.			
	October	...	...	...	...	...	...	...	...	...	N. 40 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 52 0 W.			
	December	...	...	...	...	...	...	...	...	...	N. 36 0 W.			
80. Roorkee.	January	0	3	8	30	4	36	10	96	121				
	February	9	11	17	17	10	9	27	76	104				
	March	9	23	8	19	14	22	39	67	109				
	April	8	18	8	42	9	20	44	58	93				
	May	2	11	9	99	17	11	32	57	72				
	June	8	17	17	77	11	18	26	56	70				
	July	2	18	18	138	13	12	12	20	77				
	August	0	10	18	132	8	12	17	24	89				
	September	1	14	13	54	8	20	17	68	105				
	October	0	12	9	60	12	17	11	39	150				
	November	1	8	0	45	11	9	11	28	187				
	December	1	13	8	41	0	19	28	47	153				
	Spring	19	52	25	160	40	53	115	182	274	S. 86 41 W.	.11	N. 63 W.	.10
	Summer	10	45	53	347	32	42	55	100	236	S. 41 56 E.	.29	S. 53 E.	.27
	Autumn	2	34	22	159	31	46	39	135	442	S. 8 52 W.	.06	S. 55 E.	.01
	Winter	10	27	33	88	14	64	65	219	378	N. 66 32 W.	.18	N. 49 W.	.19
	The year	41	158	133	754	117	205	274	636	1330	S. 23 57 W.	.06		

[1] Observations for the year 1871 only.

(Nos. 80(a) to 84.) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
80(a). Roorkee.[1]	January	...	...	...	...	...	...	...	...	...	N. 43° 0′ W.			
	February	...	...	...	...	...	...	...	...	...	N. 2 0 E.			
	March	...	...	...	...	...	...	...	...	...	N. 46 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 58 0 W.			
	May	...	...	...	...	...	...	...	...	...	S. 48 0 E.			
	June	...	...	...	...	...	...	...	...	...	S. 25 0 E.			
	July	...	...	...	...	...	...	...	...	...	S. 41 0 E.			
	August	...	...	...	...	...	...	...	...	...	S. 38 0 E.			
	September	...	...	...	...	...	...	...	...	...	S. 23 0 W.			
	October	...	...	...	...	...	...	...	...	...	S. 42 0 E.			
	November	...	...	...	...	...	...	...	...	...	N. 55 0 W.			
	December	...	...	...	...	...	...	...	...	...	N. 45 0 W.			
81. Agra.	January	40	16	24	8	8	8	80	16	48				
	February	32	24	8	8	8	8	96	16	24				
	March	47	35	18	19	16	20	99	14	42				
	April	17	28	27	25	17	38	68	55	25				
	May	28	24	34	19	16	13	109	33	34				
	June	22	35	37	10	9	26	91	45	25				
	July	20	49	78	19	9	19	37	28	51				
	August	8	22	67	38	33	41	25	15	61				
	September	19	33	57	8	8	8	57	32	78				
	October	21	14	12	17	16	25	74	24	107				
	November	14	5	19	15	25	39	49	20	114				
	December	17	25	27	22	17	23	78	22	79				
	Spring	92	87	79	63	49	71	276	102	101	N. 68 59 W.	.25		
	Summer	50	106	182	67	51	86	153	88	137	N. 45 0 E.	.04		
	Autumn	54	52	88	40	49	72	180	76	299	N. 67 37 W.	.04		
	Winter	89	65	59	38	33	39	254	54	151	N. 62 39 W.	.27		
	The year[3]	...	...	...	...	...	...	...	...	...	N. 71 32 W.	.18		
82. Jahnsie, 1869.	Spring	5	8	70	24	33	11	33	0	0	S. 60 58 E.	.65		
	Summer	6	4	63	17	23	26	42	1	0	S. 20 52 E.	.03		
	Autumn	13	13	41	20	33	3	54	5	0	S. 11 12 E.	.13		
	Winter	16	14	40	19	21	5	46	20	6	N. 8 55 W.	.01		
	The year	40	39	214	80	110	45	175	26	6	S. 32 22 E.	.19		
82(a). Jahnsie, 1871.	January	...	...	...	...	...	...	...	...	...	S. 75 0 W.			
	February	...	...	...	...	...	...	...	...	...	N. 10 0 W.			
	March	...	...	...	...	...	...	...	...	...	N. 31 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 41 0 W.			
	May	...	...	...	...	...	...	...	...	...	N. 31 0 W.			
	June	...	...	...	...	...	...	...	...	...	N. 79 0 W.			
	July	...	...	...	...	...	...	...	...	...	S. 86 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. $60\frac{1}{4}$ 0 W.			
	September	...	...	...	...	...	...	...	...	...	N. 18 0 W.			
	October	...	...	...	...	...	...	...	...	...	N. 74 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 57 0 W.			
83. Chuckrata.[2]	Spring	9	8	15	25	79	20	12	12	4	S. 20 25 E.	.05		
	Summer	5	1	18	78	65	7	3	6	1	S. 28 10 E.	.71		
	Autumn	2	6	14	81	64	1	2	8	4	S. 31 23 E.	.72		
	Winter	4	5	3	19	28	0	0	2	1	S. 25 37 E.	.58		
	The year[3]	...	...	...	...	...	...	...	...	...	S. 28 26 E.	.51		
83(a). Chuckrata.[1]	October	...	...	...	...	...	...	...	...	...	S. 27 0 E.			
	November	...	...	...	...	...	...	...	...	...	S. 12 0 E.			
	December	...	...	...	...	...	...	...	...	...	S. 15 0 E.			
84. Bareilly.	Spring	17	11	14	25	7	6	39	64	1	N. 50 40 W.	.33	N. 61° W.	.21
	Summer	12	12	34	65	9	8	13	17	14	S. 64 2 E.	.35	S. 56 E.	.47
	Autumn	12	15	26	17	7	5	29	29	42	N. 11 23 W.	.12	N. 78 E.	.05
	Winter	14	11	10	19	7	8	32	71	8	N. 52 1 W.	.41	N. 60 W.	.29
	The year	55	49	84	126	30	27	113	181	65	N. 33 21 W.	.09		

[1] Observations for the year 1871 only.
[2] Observations for 1869 and 3 months of 1871.
[3] Computed from the resultants for the seasons.

(Nos. 84(a) to 93(a).) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
84(a). Bareilly, 1871.	January	...	...	...	...	...	...	...	...	...	N. 44° 0′ W.				
	February	...	...	...	...	...	...	...	...	...	N. 47 0 W.				
	March	...	...	...	...	...	...	...	...	...	N. 39 0 W.				
	April	...	...	...	...	...	...	...	...	...	N. 4 0 W.				
	May	...	...	...	...	...	...	...	..	...	S. 46 0 E.				
	June	...	...	...	...	...	...	...	...	...	S. 65 0 E.				
	July	...	...	...	...	...	...	...	...	...	S. 67 0 E.				
	August	...	...	...	...	...	...	...	...	...	S. 44 0 E.				
	September	...	...	...	...	...	...	...	...	...	S. 63 0 E.				
	October	...	...	...	...	...	...	...	...	...	N. 1 0 W.				
	November	...	...	...	...	...	...	...	...	...	N. 36 0 W.				
	December	...	...	...	...	...	...	...	...	...	N. 48 0 W.				
85. Futtehgurh, 1869.	Spring	18	5	40	1	4	23	77	16	0	N. 62 40 W.	.30			
	Summer	5	11	105	3	3	7	30	8	4	N. 83 33 E.	.42			
	Autumn	4	5	58	5	17	8	70	13	2	S. 67 32 W.	.10			
	Winter	20	5	24	8	9	4	90	17	3	N. 73 39 W.	.41			
	The year	47	26	227	17	33	42	267	54	9	N. 58 47 W.	.11			
85(a). Futtehgurh, 1871.	January	...	...	...	...	...	...	...	...	...	N. 7 0 W.				
	February	...	...	...	...	...	...	...	...	...	S. 70 0 W.				
	March	...	...	...	...	...	...	...	...	...	S. 85 0 W.				
	April	...	...	...	...	...	...	...	...	...	S. 70 0 W.				
	May	...	...	...	...	...	...	...	...	...	S. 46 0 W.				
	June	...	...	...	...	...	...	...	...	...	S. 13 0 E.				
	July	...	...	...	...	...	...	...	...	...	S. 80 0 E.				
	August	...	...	...	...	...	...	...	...	...	S. 42¼ 0 E.				
	September	...	...	...	...	...	...	...	...	...	S. 70 0 E.				
	October	...	...	...	...	...	...	...	...	...	West.				
	November	...	...	...	...	...	...	...	...	...	N. 77 0 W.				
	December	...	...	...	...	...	...	...	...	...	N. 70 0 W.				
86. Northern Central India.[1]	January	66	35	68	61	22	47	126	168	211					
	February	48	42	35	46	26	64	221	179	147					
	March	69	73	68	72	70	64	227	121	167					
	April	45	51	70	86	69	81	165	198	127					
	May	47	54	108	162	75	62	164	135	123					
	June	38	74	122	136	53	62	160	148	107					
	July	28	77	200	217	52	42	80	58	168					
	August	22	47	156	230	78	79	62	59	195					
	September	27	64	169	107	52	35	105	108	233					
	October	34	53	67	118	66	46	145	105	296					
	November	27	24	34	101	83	59	125	94	353					
	December	32	53	63	102	61	64	197	126	239					
	Spring	161	178	246	320	214	207	556	454	416	N. 87 8 W.	.15	N. 71° W.	.08½	
	Summer	88	198	478	583	183	183	302	265	470	S. 52 15 E.	.19	S. 67 E.	.24	
	Autumn	88	141	270	326	201	140	375	307	882	S. 37 9 W.	.06	S. 51 E.	.04	
	Winter	146	130	166	209	109	175	544	473	597	N. 72 10 W.	.25	N. 60 W.	.20	
	The year[3]	...	...	...	...	...	...	...	...	...	S. 73 15 W.	.07			
87. Futtehpore, Patna and River Ganges.	May	6	...	76	...	1	...	41	...	...	N. 82 52 E.?	.29	N. 81 E.	.40	31
	June	0	...	62	...	1	...	57	...	...	S. 78 41 E.?	.04	....	...	30
	July	3	...	100	...	1	...	20	...	...	N. 88 34 E.?	.65	....	...	31
	August	0	...	28	...	6	...	90	...	...	S. 84 28 W.?	.50	....	...	31
	September	2	...	54	...	0	...	64	...	...	N. 78 43 W.?	.08	....	...	30
	October	0	...	24	...	0	...	100	...	...	Due West.?	.61	....	..	31
	November	0	...	30	...	0	...	90	...	...	Due West.?	.50	....	...	30
	December	13	...	45	...	0	...	66	...	...	N. 58 14 W.?	.19	S. 52° W.	.13½	31
	Summer	3	...	190	...	8	...	167	...	...	S. 76 44 E.	.06	N. 87½ E.	.11	92
	Autumn	2	...	108	...	0	...	254	...	...	N. 89 13 W.?	.40	N. 86 W.	.35	91
	The year[3]	...	...	...	...	...	...	...	...	...	N. 72 0 W.	.06	....	...	245
88–93.	[These numbers were not used.[2]]														
93(a). Lucknow.	January	...	...	...	...	...	...	...	...	...	N. 53 0 W.				
	February	...	...	...	...	...	...	...	...	...	N. 44 0 W.				
	April	...	...	...	...	...	...	...	...	...	N. 20 0 W.				
	October	...	...	...	...	...	...	...	...	...	S. 51 0 W.				

[1] Resultants computed by plotting.

[2] They were reserved for the records of Fyzabad, Morare, Nagode, Nowgong and Seetapore, which had not arrived at the time of putting this volume to press.

[3] Computed from the resultants for the seasons.

(Nos. 93(*b*) to 96.) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds
93(*b*). Lucknow Observatory (hours).[1]	April 1, 1871, to Dec. 31, 1872	121	206	375	450	573	401	202	206	126	234	157	411	796	1201	737	156	52	N. 55 15 W.	.22

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences. Direction.	Force.
93(*c*). Allahabad.	January	...	...	...	...	...	...	...	...	...	N. 89° 0′ W.			
	February	...	...	...	...	...	...	...	...	...	S. 86 0 W.			
	March	...	...	...	...	...	...	...	...	...	N. 85 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 11 0 E.			
	May	...	...	...	...	...	...	...	...	...	N. 75 0 E.			
	June	...	...	...	...	...	...	...	...	...	N. 35 0 E.			
	July	...	...	...	...	...	...	...	...	...	N. 13 0 W.			
	August	...	...	...	...	...	...	...	...	...	S. 88 0 W.			
	September	...	...	...	...	...	...	...	...	...	N. 50 0 E.			
	October	...	...	...	...	...	...	...	...	...	N. 89 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 75 0 W.			
	December	...	...	...	...	...	...	...	...	...	N. 59 0 W.			
94. Benares, 1864–1869.	Spring	35	19	24	3	3	10	35	49	6	N. 27 40 W.	.43	N. 40° W.	.20
	Summer	12	28	54	11	5	7	33	22	10	N. 43 27 E.	.22	S. 73 E.	.23
	Autumn	9	28	55	6	3	3	27	29	31	N. 11 36 E.	.21	S. 80 E.	.12
	Winter	16	14	27	4	4	9	65	26	12	N. 58 8 W.	.33	S. 75 W.	.22
	The year	72	89	160	24	15	29	160	126	69	N. 9 49 W.	.24		
94(*a*). Benares, 1871.	January	...	...	...	...	...	...	...	...	...	N. 71 0 W.			
	February	...	...	...	...	...	...	...	...	...	N. 48 0 W.			
	March	...	...	...	...	...	...	...	...	...	N. 74 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 18 0 W.			
	May	...	...	...	...	...	...	...	...	...	N. 67 0 E.			
	June	...	...	...	...	...	...	...	...	...	S. 77 0 E.			
	July	...	...	...	...	...	...	...	...	...	S. 66 0 E.			
	August	...	...	...	...	...	...	...	...	...	S. 54 0 W.			
	October	...	...	...	...	...	...	...	...	...	N. 69 0 W.			
	November	...	...	...	...	...	...	...	...	...	S. 36 0 W.			
	December	...	...	...	...	...	...	...	...	...	N. 57 0 E.			
95. Goruckpore, 1869 & '71.	Spring	2	22	37	6	1	17	52	45	2	N. 50 33 W.	.35		
	Summer	0	30	72	43	1	5	17	16	0	N. 77 4 E.	.41		
	Autumn	1	26	51	23	3	10	43	24	1	N. 41 23 E.	.87		
	Winter	4	12	28	16	6	20	51	41	2	N. 75 37 W.	.19		
	The year	7	90	188	88	11	52	163	126	5	N. 24 57 E.	.11		
95(*a*). Goruckpore, 1871.	January	...	...	...	...	...	...	...	...	...	N. 84 0 W.			
	February	...	...	...	...	...	...	...	...	...	N. 82 0 W.			
	March	...	...	...	...	...	...	...	...	...	N. 72 0 W.			
	April	...	...	...	...	...	...	...	...	...	N. 4 0 E.			
	May	...	...	...	...	...	...	...	...	...	S. 89 0 E.			
	June	...	...	...	...	...	...	...	...	...	S. 86 0 E.			
	July	...	...	...	...	...	...	...	...	...	S. 87 0 E.			
	August	...	...	...	...	...	...	...	...	...	S. 12 0 W.			
	September	...	...	...	...	...	...	...	...	...	N. 89 0 E.			
	October	...	...	...	...	...	...	...	...	...	S. 59 0 W.			
	November	...	...	...	...	...	...	...	...	...	N. 58 0 W.			
	December	...	...	...	...	...	...	...	...	...	S. 74 0 W.			
96. Mozufferepore.	Winter	0	0	27	1	0	1	59	2	...	N. 88 5 E.	.59		

[1] Total number of miles of wind during the year (9 months) 18,479.

(No. 97.) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
97. Northeastern India.[1]	January	11	8	21	9	8	6	40	12	6				
	February	4	8	8	7	0	15	37	31	2				
	March	10	12	16	4	3	13	24	40	2				
	April	18	5	16	1	0	5	40	33	0				
	May	15	24	105	4	2	9	64	21	6				
	June	4	27	100	20	1	2	69	14	2				
	July	7	18	155	19	5	2	29	7	4				
	August	4	13	61	15	8	8	119	17	4				
	September	3	22	108	23	3	7	70	4	0				
	October	3	12	58	3	2	4	132	25	19				
	November	6	20	48	3	1	2	122	24	13				
	December	18	10	71	4	2	8	105	24	6				
	Spring	43	41	137	9	5	27	128	94	8	N. 20° 52′ W.	.23	N. 6° W.	.11
	Summer	15	58	316	54	14	12	217	38	10	N. 81 10 E.	.20	S. 74 E.	.28
	Autumn	12	54	214	29	6	13	324	53	32	N. 62 3 W.	.15	S. 63 W.	.07½
	Winter	33	26	127	21	10	30	241	69	14	N. 67 57 W.	.28	West.	.19
	The year[2]	...	...	...	...	...	...	...	...	...	N. 31 53 W.	.11		

[1] Observed at the following places, Nos. 87, 94 and 95.
[2] Computed from the resultants for the seasons.

(Nos. 98 to 103.) **Loo-Choo and Bonin Islands, and Pacific Ocean.**
East of Longitude 180°.

Observed as follows:—

At *Napha*, Loo-Choo Islands, by officers attached to the United States Expeditions to Japan, under command of Commodores Perry and Rogers, for an aggregate period of 70 days.

At *sea*, for an aggregate period of over three years; the observations being collected and classified from the logs of the different sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

At *Port Lloyd*, Bonin Islands, by Anton Schonborn, under direction of Commodore Rogers, for 48 days in the autumn of

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
98. At sea, long. 110° to 135° E.	Winter	33	8	17	10	3	2	0	2	2	0	12	0	4	0	19	19	8	N. 2° 2′ W.	.54	N. 39½° W.	.33	46
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 33 52 E.	.34	....	...	302
99. At sea, long. 115° to 135° E.	Spring	50	24	35	21	56	26	23	9	22	30	40	0	6	5	31	11	12	N. 70 56 E.	.20	S. 1½ E.	.21	134
	Autumn	23	34	51	7	1	2	1	1	3	0	1	0	0	0	2	6	3	N. 30 22 E.	.80	N. 28 E.	.44	45
100. Napha.	Spring	6	1	2	1	1	3	7	6	18	13	15	7	1	6	0	8	5	S. 3 34 W.	.31	....	...	35
	Autumn	12	8	11	4	2	0	0	0	1	0	0	0	0	0	1	5	0	N. 22 57 E.	.79	....	...	15
	Winter	20	9	15	3	2	1	3	0	0	0	1	0	0	0	2	3	0	N. 25 33 E.	.70	....	...	20
101. At sea, long. 120° to 135° E.	Summer	6	9	10	36	35	11	15	8	24	11	44	1	4	3	8	7	0	S. 46 10 E.	.25	S. 1 W.	.49	77
102. At sea, long. 135° to 145° E.[1]	Spring	31	24	72	61	96	37	74	34	67	69	72	22	29	20	34	12	50	S. 49 41 E.	.23	S. 16½ E.	.13	268
	Summer	42	22	54	39	206	43	79	55	97	49	141	79	93	20	41	5	58	S. 16 48 E.	.22	S. 21½ W.	.20	374
	Autumn	3	1	26	10	22	19	15	5	6	3	12	2	3	1	10	0	5	S. 83 8 E.	.41	S. 84¼ E.	.27	48
	Winter	19	4	8	11	12	5	2	0	10	1	4	1	17	5	28	9	4	N. 17 54 W.	.34	N. 34½ W.	.42	47
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 5 E.	.14	....	...	705
103. At sea, long. 145° to 150° E.	Spring	0	1	4	15	7	6	6	13	5	3	12	1	3	0	2	5	1	S. 47 53 E.	.35	....	...	28
	Summer	10	15	17	17	47	27	21	3	18	6	52	28	44	12	3	0	5	S. 0 47 W.	.15	....	...	108
	Autumn	0	3	0	0	6	0	0	0	0	3	0	0	0	0	0	3	0	N. 60 12 E.	.37	....	...	5
	Winter	9	8	10	1	0	2	6	0	6	3	8	6	16	6	14	1	4	N. 60 28 W.	.31	....	...	33
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 43 E.	.08	....	...	174

[1] Including Port Lloyd. [2] Computed from the resultants for the seasons.

ZONE No. 14.

Latitude 20° to 25° North.

The data for the study of the winds of this zone consist of observations made at over 36 stations on land, for an aggregate period of over 52 years; at sea for about 26 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Sandwich Islands,	3	2 years 9 months.
Mexico,	11	1 year 4 months.
Florida Keys and West Indies,	10	19 years 6 months.
Atlantic Ocean,	. . . .	nearly 8 years.
Africa,	4	3 months.
Red Sea,	. . . .	29 days.
Arabian Sea,	. . . .	454 days = 1 year 3 months.
Asia,	8	28 years 7 months.
Bay of Bengal,	. . . .	over 1 year.
China Sea,	. . . .	nearly 2 years.
Pacific Ocean,	. . . .	5000 days = 13 years 8 months.

(Nos. 1 to 6.) **Sandwich Islands and the Pacific Ocean.**
East of Longitude 180°.

Observed at the following places, viz.:—

At *sea*, for an aggregate period of about 13 years; the observations being collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, superintendent.

Honolulu, for 406 days in the years 1837, 1840 to 1843 inclusive, and October, 1852, to January, 1853, inclusive.

Lahainoluna, during the months of May, June, and July, 1844.

Waioli, by Edward Johnson, from April, 1845, to March, 1846, inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
1.	Spring	123	206	929	562	340	91	95	38	70	27	69	40	44	28	66	39	95	N. 57° 21′ E.	.64	N. 33½° W.	.10	954
At sea,	Summer	14	10	114	130	95	30	6	0	6	0	6	0	6	3	0	0	0	N. 67 59 E.	.81	N. 74¼ E.	.16	140
longitude	Autumn	129	105	867	534	785	227	165	46	52	33	53	3	24	11	35	28	91	N. 71 17 E.	.73	S. 71¼ E.	.10	1064
155° to	Winter	26	29	161	96	82	46	20	6	32	11	26	17	21	11	11	9	18	N. 66 28 E.	.48	S. 64½ W.	.17	207
165° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 2 E.	.65	....	...	2365
	Spring	27	...	643	...	115	...	76	...	65	...	86	...	31	...	33	...	191	N. 57 23 E.	.47½	S. 52 E.	.01	159
2.	Summer	3	...	421	...	306	...	78	...	84	...	4	...	2	...	2	...	32	N. 76 13 E.	.72	S. 72½ E.	.33	164
Sandwich	Autumn	13	...	1935	...	140	...	65	...	48	...	34	...	0	...	2	...	424	N. 50 25 E.	.75	N. 40 E.	.28	293
Islands.	Winter	234	...	488	...	77	...	81	...	89	...	420	...	179	...	321	...	628	N. 31 39 W.	.17	S. 76 W.	.50	237
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 56 31 E.	.45	....	...	853
3.	Spring	18	6	65	51	32	2	25	4	0	0	0	3	1	0	3	0	3	N. 66 32 E.	.73	N. 32 E.	.02	70
At sea,	Summer	8	16	69	61	49	4	4	2	3	0	0	0	0	0	0	0	0	N. 62 55 E.	.87	N. 50 E.	.16	72
longitude	Autumn	46	61	450	219	279	49	69	14	49	26	29	6	17	6	24	16	17	N. 66 42 E.	.66	S. 48 W.	.05	459
140° to	Winter	20	11	76	44	80	15	23	9	7	5	9	2	9	0	11	5	3	N. 70 45 E.	.59	S. 42 W.	.13	110
155° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 56 E.	.71	....	...	711
4.	Spring	27	35	154	39	12	3	1	0	3	0	0	0	0	3	5	4	1	N. 41 39 E.	.86	N. 75¼ E.	.08	96
At sea,	Summer	73	69	85	5	1	0	0	3	0	0	0	0	0	0	0	14	3	N. 22 49 E.	.89	N. 39¼ W.	.23	84
longitude	Autumn	19	19	67	15	8	1	4	3	1	0	0	0	0	0	3	6	4	N. 40 26 E.	.79	S. 49 E.	.02	50
125° to	Winter	14	30	98	43	30	6	4	3	4	1	3	6	2	2	1	8	3	N. 50 29 E.	.72	S. 14½ E.	.18	86
140° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 38 9 E.	.80	....	...	316
5.	Spring	42	20	31	3	0	0	0	0	0	0	0	0	0	11	1	9	0	N. 10 33 E.	.84	N. 1¾ E.	.07	39
At sea,	Summer	70	24	24	4	5	8	5	0	4	2	4	0	11	1	25	36	9	N. 0 25 W.	.63	S. 54½ W.	.19	77
longitude	Autumn	58	35	25	5	0	0	0	0	0	0	0	0	0	0	7	7	7	N. 13 1 E.	.86	N. 26¾ E.	.09	48
115° to	Winter	36	69	63	31	6	0	1	0	0	0	0	0	2	3	27	13	4	N. 19 50 E.	.79	S. 89 E.	.11½	82
125° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 11 23 E.	.77	....	...	246
6.	Spring	18	2	5	1	4	1	5	4	11	0	17	3	72	18	150	36	10	N. 56 22 W.	.70	N. 86½ W.	.17	119
At sea,	Summer	10	0	2	1	5	0	6	0	2	2	13	3	35	14	41	8	5	N. 66 52 W.	.60	S. 44 W.	.19	49
longitude	Autumn	114	24	61	13	29	5	37	2	26	4	40	22	63	62	342	75	80	N. 36 47 W.	.53	N. 62½ E.	.09	333
105° to	Winter	360	74	97	36	45	16	43	0	82	1	69	31	151	34	269	128	53	N. 23 11 W.	.48	N. 74¼ E.	.22½	496
115° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 47 46 W.	.55	....	...	997

[1] Computed from the resultants for the seasons.

(No. 7.) **Eastern Mexico.**

Observed at the following places, viz. :—

Catorce,
Horcasitas,
Padilla,
Llanado,
Queretaro,
San Catalina,
San Felipe,
Tamiagua (Lake),
Tampico,
Venado,
Zacualtipam,

and other places in their vicinity, by Dr. Louis Berlandier, for an aggregate period of 475 days, during transient sojourns about the year 1820.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
Spring	33	92	40	322	29	10	12	15	45	S. 62° 53′ E.?	.57
Summer	0	0	0	9	0	0	0	0	5	S. 45 0 E.???	.64
Autumn	15	52	13	72	21	12	6	30	51	S. 84 22 E.?	.24
Winter	88	252	107	472	101	228	27	116	94	S. 44 17 E.	.23
The year[1]	...	...	...	...	...	...	...	...	...	S. 56 28 E.	.40

[1] Computed from the resultants for the seasons.

(No. 8.) **Yucatan, Central America.**

"On the northern and western coasts of Yucatan there is a constant N. E. wind throughout the years."—*Purdy's Sailing Directory.*

(Nos. 9 to 14.) **Florida Keys.**

Computed from observations made at the following places, viz. :—

Fort Jefferson, for an aggregate period of 51 months in the years 1861 to 1864 inclusive, and 1869, by the Surgeon of the Post.

Fort Taylor, for an aggregate period of 15 months in the years 1861 to 1863 inclusive, by the Surgeon of the Post.

Indian Key, during the year 1835, by Charles Howe.

Key West, 4 years, 1834 to 1837 inclusive, by W. A. Whitehead.

Key West Barracks.

Salt Ponds, 11 years, 1854 to 1864 inclusive, by W. C. Dennis.

Tortugas Island, during the year 1835, by Alexander Thompson.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.		
9. Key West.	January	32	8	40	0	56	0	48	0	8	8	8	0	0	0	32	0	8	N. 68° 32′ E.	.39
	February	40	0	40	0	48	0	32	8	0	8	0	8	0	8	24	0	8	N. 54 32 E.	.37
	March	16	8	48	0	80	0	24	0	8	0	8	0	0	8	24	8	16	N. 61 49 E.	.46
	April	16	8	32	0	32	0	56	8	8	8	16	0	8	0	16	8	24	S. 81 55 E.	.27
	May	8	0	24	0	72	0	64	8	8	8	16	8	0	0	24	0	8	S. 67 44 E.	.40
	June	8	0	32	0	48	0	40	0	32	0	24	0	8	8	24	0	16	S. 61 50 E.	.23
	July	0	0	24	0	72	0	72	0	24	0	16	0	8	0	8	0	24	S. 61 3 E.	.53
	August	0	0	32	0	48	0	64	0	24	0	24	0	16	8	16	8	8	S. 55 38 E.	.30
	September	8	0	64	0	48	0	64	8	0	0	16	0	8	0	8	8	8	N. 84 59 E.	.46
	October	32	8	80	0	32	0	40	0	0	0	8	0	0	0	16	16	16	N. 47 44 E.	.53
	November	16	16	88	0	72	0	16	0	8	0	0	0	0	0	16	0	8	N. 58 48 E.	.68
	December	40	8	72	0	48	0	11	8	8	0	0	8	0	8	24	8	0	N. 40 53 E.	.50
	The year	216	56	576	0	656	0	536	40	128	32	136	24	48	40	232	56	144	N. 78 6 E.	.38

(Nos. 9(*a*) to 13(*a*).) **Florida Keys.**—*Continued.*

Place and kind of observations	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
9(*a*). Fort Taylor.	Spring	15	84	63	144	72	30	9	40	...	S. 60° 49′ E.	.41½	
	Summer	15	0	9	9	48	21	12	6	...	S. 17 26 W.	.44	
	Autumn	48	96	93	96	36	28	9	18	...	N. 88 30 E.	.44	
	Winter	39	66	16	84	15	13	0	36	...	N. 72 45 E.	.34	
	The year[2]	...	...	...	...	...	...	...	...	...	S. 62 59 E.	.28	
10. Key West Barracks.	Spring	574	633	1077	623	390	143	152	273				
	Summer	119	457	1352	1249	639	283	193	128				
	Autumn	738	1363	973	585	273	159	126	199				
	Winter	1019	893	669	359	274	94	85	193				
11. Surface winds at Salt Ponds in the years 1855, '56 & '57.[1] No. of observations.	Spring	151	147	183	170	37	17	48	148	19	N. 51 52 E.	.336	
	Summer	36	96	302	335	61	29	19	39	10	S. 70 48 E.	.615	
	Autumn	192	297	193	96	27	13	32	55	15	N. 49 33 E.	.559	
	Winter	230	227	126	129	31	22	27	95	15	N. 39 57 E.	.463	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 65 16 E.	.431	
No. of miles.	Spring	2154	2383	3145	2542	521	185	555	2439	...	N. 53 41 E.	.370	
	Summer	438	1205	4649	3895	579	181	74	247	...	S. 75 47 E.	.714	
	Autumn	2677	4479	2635	1120	3055	79	222	814	...	N. 47 5 E.	.641	
	Winter	4159	3897	1472½	2066	466	248	313	2156	...	N. 30 7 E.	.487	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 59 5 E.	.472	
M'n vel. in miles p.h'r.	Spring	14.26	16.21	17.19	14.95	14.08	10.88	11.15	16.48				
	Summer	12.17	12.96	15.39	11.77	9.49	6.24	3.89	6.33				
	Autumn	13.94	15.50	13.65	11.67	11.32	6.08	6.94	15.36				
	Winter	18.08	17.17	11.69	16.02	15.03	11.27	11.59	22.69				
12. Tortugas Island.	Spring	4	34	15	18	5	3	1	3	9	N. 77 30 E.	.52	92
	Summer	0	6	11	16	2	3	2	1	4	S. 64 13 E.?	.53	92
	Autumn	8	34	16	13	1	2	1	7	9	N. 58 30 E.	.54	91
	Winter	16	32	11	7	6	3	1	12	2	N. 38 23 E.?	.45	90
	The year	28	106	53	54	14	11	5	23	24	N. 65 ·29 E.	.48	365
13. Indian Key.	Spring	14	2	20	17	25	2	8	2	2	....	...	92
	Summer	1	3	46	23	7	6	2	1	3	S. 67 28 E.	...	92
	Autumn	16	19	30	8	3	4	5	5	1	....	...	91
	Winter	22	13	14	13	8	1	4	14	1	N. 37 36 E.	...	90
	The year	53	37	110	61	43	13	19	22	7	S. 89 44 E.	.47	365
13(*a*). Fort Jefferson.	January	12	4	58	2	5	2	3	7	0			
	February	45	74	86	70	16	12	19	17	0			
	March	39	105	79	57	15	20	15	42	0			
	April	67	110	86	30	26	1	24	14	0			
	May	75	73	90	35	22	18	29	30	0			
	June	27	76	126	75	10	10	5	19	0			
	July	35	86	107	48	45	68	49	27	0			
	August	26	113	87	53	21	31	9	20	10			
	September	27	103	219	132	39	23	24	64	0			
	October	59	83	171	61	9	26	21	35	0			
	November	87	128	153	19	15	8	14	23	0			
	December	65	139	91	12	4	1	31	26	0			
	Spring	181	288	255	122	63	39	68	86	0	N. 55 25 E.	.43	
	Summer	88	275	320	176	76	109	63	66	10	N. 83 28 E.	.38½	
	Autumn	173	314	543	212	63	57	59	122	0	N. 76 33 E.	.44	
	Winter	122	217	235	84	25	15	53	50	0	N. 58 10 E.	.51	
	The year[2]	...	...	...	...	...	...	...	...	...	N. 67 36 E.	.43	

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	15.43	12.38	13.78	16.66	14.56
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	5.18	7.61	7.70	7.71	6.28
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	5.71	8.84	8.62	8.11	6.87
Excess of the latter over the former	+.53	+1.23	+.92	+.40	+.59

[2] Computed from the resultants for the seasons.

(No. 14.) **Florida Keys.**—*Continued.*

Kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
14. Aggregate number of observations at all stations.	Surface winds.	Spring	1123½	1553½	2037	1547	765	432	387	890	161	N. 74° 5′ E.	.34		
		Summer	330	1041	2656	2329	1020	586	352	356	124	S. 66 20 E.	.50		
		Autumn	1422	2762	2269	1291	475	338	263	509	72	N. 65 37 E.	.50		
		Winter	1817	2015	1498	1048	439	224	192	549	74	N. 51 47 E.	.48		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 76 5 E.	.41½		
	Motion of clouds.	Spring	20	72	17	24	53	99	56	100	...	N. 86 41 W.	.25½	S. 85° W.	.10
		Summer	15	22	13	35	25	67	84	69	...	S. 82 1 W.	.39	S. 72 W.	.24
		Autumn	24	81	73	45	14	49	36	40	...	N. 65 16 E.	.19	S. 11 W.	.10
		Winter	13	39	27	24	33	45	31	74	...	N. 75 42 W.	.16	N. 60 E.	.20
		The year[1]	...	...	...	...	...	...	...	...	...	N. 83 53 W.	.15½		
	The two combined.	Spring	1143½	1625½	2054	1571	818	531	443	990	161	N. 76 10 E.	.31	S. 76 W.	.08
		Summer	345	1063	2669	2364	1045	653	436	425	124	S. 65 52 E.	.47	S. 9½ E.	.29½
		Autumn	1446	2843	2342	1336	489	387	299	549	72	N. 63 40 E.	.49½	N. 27 E.	.14
		Winter	1830	2054	1525	1072	472	269	223	623	74	N. 51 21 E.	.45½	N. 10 W.	.19
		The year[1]	...	...	...	...	...	...	...	...	...	N. 57 59 E.	.39½		

[1] Computed from the resultants for the seasons.

(Nos. 15 to 18.) **West Indies.**

Observed at the following places, viz.:—

Havana, Cuba, by Andres Poey, from July 15, 1850, to July 11, 1851, and during the years 1859, 1860 and 1861.

Matanzas, Cuba, by A. Mallory, during the years 1832, 1833, 1834 and 1835.

Turks Island, Southern Bahamas, by J. B. Hayne and others[1] during an aggregate period of 36 months in the years 1844, 1859, 1860, 1861, 1863, 1864, 1865 and 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
15. Havana.	Spring	56	2	339	1	255	0	196	2	48	3	31	4	2	1	24	1	1	N. 78° 25′ E.	.62	S. 57° W.	.05
	Summer	63	1	298	5	316	8	185	5	18	0	15	6	0	2	11	0	0	N. 79 51 E.	.70½	S. 55 E.	.05
	Autumn	66	0	290	1	324	0	201	0	9	0	19	1	19	0	12	0	0	N. 79 40 E.	.69	S. 30 E.	.04
	Winter	110	0	315	1	304	1	126	0	36	0	3	3	0	0	29	0	0	N. 69 13 E.	.68	N. 14½ W.	.09
	The year	295	3	1242	8	1199	9	708	7	111	3	68	14	21	3	76	1	1	N. 77 5 E.	.67		
16. Matanzas.[2]	January	9	...	10	...	3	...	2	...	5	...	0	...	0	...	0	...	...	N. 49 57 E.	.49		
	February	11	...	7	...	5	...	0	...	0	...	0	...	0	...	1	...	...	N. 29 0 E.	.68		
	March	7	...	12	...	6	...	0	...	3	...	0	...	0	...	0	...	...	N. 51 11 E.	.42		
	April	1	...	18	...	1	...	0	...	3	...	0	...	0	...	0	...	...	N. 51 0 E.	.59		
	May	0	...	23	...	2	...	0	...	1	...	0	...	0	...	0	...	...	N. 50 7 E.	.77		
	June	0	...	9	...	0	...	0	...	0	...	0	...	0	...	0	...	...	N. 45 0 E.	.42		
	July	0	...	9	...	0	...	0	...	0	...	0	...	0	...	0	...	...	N. 45 0 E.	.41		
	August	0	...	13	...	2	...	1	...	1	...	0	...	0	...	0	...	...	N. 56 36 E.	.46		
	September	0	...	12	...	0	...	0	...	2	...	2	...	0	...	1	...	...	N. 47 44 E.	.29		
	October	10	...	18	...	3	...	0	...	0	...	0	...	0	...	0	...	...	N. 34 41 E.	.89		
	November	4	...	22	...	4	...	0	...	0	...	0	...	0	...	0	...	...	N. 45 0 E.	.92		
	December	8	...	12	...	4	...	0	...	2	...	0	...	0	...	0	...	...	N. 40 46 E.	.62		
	Spring	8	...	53	...	9	...	0	...	7	...	0	...	0	...	0	...	...	N. 50 12 E.	.78½		
	Summer	0	...	31	...	2	...	1	...	1	...	0	...	0	...	0	...	...	N. 50 26 E.	.91		
	Autumn	14	...	52	...	7	...	0	...	2	...	2	...	0	...	1	...	...	N. 53 53 E.	.76		
	Winter	28	...	29	...	12	...	2	...	7	...	0	...	0	...	1	...	...	N. 50 40 E.	.67		
	The year	83	0	165	280	50	0	3	0	69	0	2	0	0	0	2	0	375	N. 60 39 E.	.65		
17. Northern Cuba.[3]	Spring	64	2	392	1	264	0	196	2	55	3	31	4	2	1	24	1	1	N. 77 34 E.	.62½	S. 36 W.	.06
	Summer	63	1	329	5	318	8	186	5	19	0	15	6	0	2	11	0	0	N. 76 17 E.	.72	S. 73 E.	.06
	Autumn	80	0	342	1	331	0	201	0	11	9	21	0	19	1	13	0	0	N. 76 55 E.	.67	S. ½ W.	.04
	Winter	138	0	344	1	316	1	128	0	43	0	3	3	0	0	30	0	0	N. 66 26 E.	.70	N. 4 W.	.10
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 59 E.	.67		
18. Turks Island.	Spring	50½	...	473	...	263	...	206	...	16	...	17	...	15	...	30½	...	16	N. 71 28 E.	.67	N. 19 E.	.20
	Summer	0	...	110	...	223	...	327	...	0	...	0	...	0	...	0	...	3	S. 63 35 E.	.52	S. 23 W.	.27
	Autumn	24	...	209	...	58	...	38	...	24	...	17	...	4	...	6	...	3	S. 85 26 E.	.55½	S. 11 W.	.06
	Winter	25	...	203	...	201	...	119	...	16	...	7	...	8	...	32	...	23	N. 77 37 E.	.63½	N. 24 E.	.13
	The year[4]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 88 8 E.	.57		

[1] J. C. Crisson, A. J. Carothers, United States Consul, W. Hamilton and S. G. Garland.
[2] Months and seasons for the year 1835 only. [3] Two preceding numbers combined.
[4] Computed from the resultants for the seasons.

(Nos. 19 to 28.) **Atlantic Ocean.** Longitude 15° to 80° W.

Computed from observations for an aggregate period of nearly 8 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
19. Longitude 60° to 80° W.	Spring	32	24	120	54	96	45	85	20	26	5	21	6	11	11	28	12	22	N. 79° 42′ E.	.49	N. 15° W.	.14	206
	Summer	0	1	37	45	60	34	35	4	6	4	2	0	0	1	0	0	7	S. 87 45 E.	.77	N. 86 E.	.25	79
	Autumn	4	8	56	18	31	29	32	17	8	11	20	7	0	1	4	3	11	S. 77 12 E.	.40	S. 72½ W.	.13½	87
	Winter	26	34	102	41	53	19	52	7	28	9	11	1	7	2	4	10	17	N. 72 55 E.	.51	N. 9½ W.	.20	141
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 50 E.	.52	....	...	531
20. Longitude 55° to 60° W.	Spring	14	16	169	61	84	45	82	15	28	6	13	3	11	10	11	5	21	N. 80 28 E.	.56	S. 59¼ W.	.02	198
	Summer	6	14	86	64	104	33	25	10	2	3	4	3	0	0	2	0	1	N. 78 9 E.	.78	N. 74¼ E.	.18	119
	Autumn	10	24	65	32	51	21	65	11	17	9	8	2	4	1	4	1	12	N. 89 34 E.	.55	S. 12½ W.	.10	112
	Winter	27	25	78	39	51	29	37	6	14	9	9	7	8	7	13	8	10	N. 68 18 E.	.47	N. 62½ W.	.15	126
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 37 E.	.58	....	...	155
21. Longitude 50° to 55° W.	Spring	22	20	72	58	69	28	42	6	12	7	14	7	12	7	11	7	6	N. 74 37 E.	.48	N. 56½ W.	.04½	133
	Summer	6	8	93	51	45	14	15	3	7	0	5	2	0	0	0	1	6	N. 68 52 E.	.75	N. 51½ E.	.27	85
	Autumn	7	6	57	44	50	35	35	4	14	16	13	3	6	2	2	2	12	N. 87 28 E.	.53	S. 27½ E.	.08½	103
	Winter	3	9	23	15	20	10	8	13	12	4	8	4	7	2	12	7	0	N. 83 44 E.	.27	S. 72¼ W.	.23½	52
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 20 E.	.50	....	..	373
22. Longitude 40° to 50° W.	Spring	7	27	16	29	30	25	4	5	17	4	8	8	4	13	2	0	7	N. 79 4 E.	.36	S. 49¾ W.	.24	69
	Summer	8	22	34	52	13	6	0	3	4	2	2	0	0	2	0	0	4	N. 57 44 E.	.75	N. 30 E.	.20	51
	Autumn	5	20	31	59	38	26	12	9	4	5	3	1	0	3	0	7	8	N 75 40 E.	.66	S. 56¼ E.	.12	77
	Winter	7	20	18	43	16	13	2	7	2	3	1	10	0	2	1	6	3	N. 62 36 E.	.55	N. 57¼ W.	.05	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 19 E.	.58	....	...	248
23. Longitude 45° to 80° W.	January	24	28	58	42	24	22	28	9	30	10	9	5	11	3	18	15	10	N. 65 29 E.	.35	N. 76½ W.	.24	116
	February	21	24	89	40	64	23	40	15	15	10	9	5	10	5	8	4	9	N. 75 53 E.	.50½	N. 72 W.	.05	131
	March	35	33	68	66	81	36	60	11	21	7	20	13	20	20	20	14	21	N. 72 33 E.	.37½	N. 84 W.	.18	182
	April	29	30	125	54	97	58	78	14	37	9	24	6	13	14	27	8	24	N. 82 4 E.	.46	S. 66 W.	.09	216
	May	5	17	179	62	90	36	75	20	18	4	7	5	5	0	5	2	11	N. 80 1 E.	.65	N. 83½ E.	.10	181
	June	4	9	83	43	57	29	29	9	9	5	7	3	0	3	2	0	8	N. 80 42 E.	.65	N. 87¾ E.	.10	100
	July	3	19	59	85	92	32	22	6	6	0	3	0	0	0	0	1	7	N. 78 24 E.	.81	N. 76¼ E.	.26	112
	August	13	13	86	49	64	20	24	3	4	4	3	2	0	0	0	0	0	N. 72 6 E.	.76	N. 53 E.	.24	95
	September	7	33	65	40	46	20	60	3	10	10	15	2	3	3	0	6	11	N. 83 0 E.	.54	S. 3 W.	.04	112
	October	9	10	45	30	60	52	68	21	14	14	22	8	3	3	5	1	8	S. 68 49 E.	.55	S. 5½ W.	.31	125
	November	10	13	87	48	46	27	14	17	18	17	7	3	4	1	5	5	18	N. 79 1 E.	.52	S. 85½ W.	.03	114
	December	13	28	62	30	46	19	29	5	9	2	10	2	1	3	3	9	10	N. 69 52 E.	.57	North.	.13	94
	The year	173	257	1006	589	767	374	507	134	191	92	136	54	70	55	93	65	137	N. 79 23 E.	.55	....	...	1578
24. Longitude 35° to 40° W.	Spring	3	15	22	58	16	4	0	2	4	5	1	8	3	8	0	10	4	N. 54 17 E.	.54	S. 88¾ W.	.11½	54
	Summer	0	16	58	85	8	7	2	1	0	0	0	0	0	0	3	4	1	N. 55 8 E.	.87	N. 40 E.	.25½	62
	Autumn	6	16	33	75	30	26	10	13	4	3	3	0	0	4	0	2	7	N. 77 21 E.	.69	S. 35½ E.	.20	77
	Winter	5	30	39	58	24	8	1	10	1	7	3	3	1	18	2	8	3	N. 53 25 E.	.54	N. 87 W.	.12	77
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 22 E.	.64	....	...	270
25. Longitude 30° to 35° W.	Spring	6	13	31	27	15	5	3	2	2	7	1	5	6	8	1	10	3	N. 46 17 E.	.46	N. 78 W.	.14	48
	Summer	6	93	69	82	19	17	1	11	1	2	0	0	0	0	1	8	3	N. 50 40 E.	.80	N. 34¾ E.	.26	104
	Autumn	20	29	26	72	32	24	6	7	6	6	6	5	2	13	3	14	7	N. 58 52 E.	.52	S. 44 W.	.03	93
	Winter	7	25	26	63	37	33	12	14	8	21	9	5	4	6	4	13	4	N. 81 4 E.	.45	S. 5½ W.	.22½	97
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 58 13 E.	.55	....	...	342
26. Longitude 25° to 30° W.	Spring	5	22	13	21	11	6	2	4	0	10	6	8	2	6	7	29	5	N. 18 20 E.	.35	S. 72¾ W.	.25	52
	Summer	21	183	84	51	12	1	1	1	0	6	4	0	0	2	1	10	5	N. 31 18 E.	.72	N. 5¼ E.	.21	129
	Autumn	2	80	39	74	22	9	4	8	7	14	13	4	0	13	6	10	11	N. 49 35 E.	.51	S. 22½ E.	.08	105
	Winter	9	23	21	31	22	14	1	4	1	6	5	7	1	2	3	4	7	N. 59 52 E.	.50	S. 26½ E.	.17	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 41 9 E.	.54	....	...	340
27. Longitude 15° to 25° W.	Spring	13	27	11	10	4	6	0	2	0	8	1	2	1	6	10	16	6	N. 11 28 E.	.50	S. 87 W.	.20	41
	Summer	27	179	39	29	9	3	2	4	2	0	0	13	0	4	0	10	3	N. 27 19 E.	.79	N. 17¾ E.	.21	108
	Autumn	4	69	24	21	10	5	1	2	6	8	3	6	2	8	2	8	4	N. 33 23 E.	.54	S. 3½ E.	.09	61
	Winter	17	46	19	25	17	16	4	5	5	2	4	3	1	3	2	4	0	N. 50 58 E.	.58	S. 50¼ E.	.31	58
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 30 44 E.	.58	....	...	268
28. Longitude 15° to 45° W.	January	7	38	42	62	42	29	10	8	5	17	15	17	5	17	8	13	2	N. 64 9 E.	.38	S. 24½ W.	.23	113
	February	28	55	19	68	19	25	8	18	5	4	5	4	1	9	3	9	2	N. 56 50 E.	.53	S. 21½ E.	.08	94
	March	21	24	18	30	21	15	5	7	12	19	10	12	4	24	5	29	8	N. 26 6 E.	.21	S. 62 W.	.39	88
	April	10	33	31	58	20	16	1	4	1	12	3	7	1	5	12	28	6	N. 43 0 E.	.51½	S. 88 W.	.10	83
	May	2	28	33	49	16	3	0	0	0	1	0	4	8	6	1	8	4	N. 45 34 E.	.67	N. 20 E.	.10	55
	June	9	112	64	92	29	19	3	12	2	5	2	0	0	3	2	19	8	N. 48 49 E.	.74	N. 45½ E.	.19	124
	July	25	210	129	110	8	4	0	1	1	3	2	13	0	0	2	5	2	N. 37 45 E.	.85	N. 10 E.	.28	172
	August	20	153	77	86	20	11	3	7	0	0	0	0	0	3	1	8	5	N. 42 1 E.	.84	N. 20 E.	.26	132
	September	10	77	42	82	34	13	1	9	1	4	2	3	1	6	0	13	6	N. 51 8 E.	.71	N. 64½ E.	.15	102
	October	14	56	36	91	37	19	8	8	12	11	11	5	2	16	3	16	15	N. 57 58 E.	.50	S. 8 W.	.11	120
	November	9	63	56	101	41	44	14	13	10	16	12	7	1	15	8	6	14	N. 67 7 E.	.53	S. 14½ E.	.19	144
	December	8	39	56	73	45	24	2	10	7	14	3	7	1	5	1	10	11	N. 65 9 E.	.59	S. 27 E.	.17	106
	The year[1]	163	888	603	902	332	222	55	97	56	106	65	79	24	109	46	164	83	N. 55 20 E.	.58	....	...	1333

[1] Computed from the resultants for the seasons.

(Nos. 29 to 31.) **Northwestern Nubia, Red Sea, and Western Arabia.**

Observed at the following places, viz. :—

Assouam, *Selimeh*, *Tomas*, } Nubia, and the intervening regions, by Frederick Cailliard, from November 22, 1820, to January 10, 1821, and from May 18 to 31, 1821.

River Nile (lat. 22° to 24°), by Dickinson and Hubbard, from January 27 to February 12, 1857.

Red Sea, by Lefebore, for 29 days in the winter of 1838–9.

Jidda, Arabia, by Lefebore, for 18 days in April and May, 1839.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
29. Northwestern Nubia.	Spring	17	0	0	11	0	0	0	0	0	N. 40° 14′ E.???	.43	
	Autumn	13	0	0	0	0	0	0	0	1	Due north.???	.93	
	Winter	80	0	0	0	0	1	1	5	29	N. 3 37 W.??	.72	
30. Red Sea.	Winter	4	1	0	5	1	5	0	20	...	N. 50 59 W.??	.48	29
31. Jidda, Arabia.	Spring	0	2	2	0	0	6	3	23	...	N. 56 14 W.??	.67	18

(No. 32.) **Arabian Sea**, longitude 56° to $72\frac{1}{2}$° E.

Computed from observations collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			
Spring	0	0	2	5	8	13	15	4	7	16	33	12	23	17	6	3	2	S. 41° 43′ W.	.42	55
Summer	3	1	2	4	1	2	5	2	6	11	10	6	0	2	1	1	0	S. 15 40 W.	.40	19
Autumn	25	26	28	7	3	11	15	7	11	17	42	26	38	11	17	10	15	N. 81 26 W.	.20	103
Winter	17	7	19	3	20	5	4	6	6	1	13	0	9	9	20	7	3	N. 7 52 E.	.25	50
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 11 W.	.17½	227

[1] Computed from the resultants for the seasons.

(Nos. 33 to 39.) **India.**

Observed at the following places, viz.:—

Akyab, during the years 1868 and 1869.

Bancoora, by John McRichie, during the year 1832.

Calcutta, during the years 1861 to 1865 inclusive.

Dum-dum, by Hardwicke, for a period of eight years; date not preserved.

Kurrachee, from May to October inclusive in the year 1844.

Nagpoor, by Dr. Wylie, from 1821 to 1823, and from 1826 to 1829, both inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
33. Kurrachee.	May	2	0	1	0	1	13	68	7	1	S. 87° 43′ W.??	.87½	31
	Summer	0	0	0	0	4	37	223	12	0	S. 85 11 W.	.93⅓	92
	Autumn	4	3	0	0	2	11	93	14	2	N. 86 42 W.?	.84½	61

(Nos. 34 to 39.) **India.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
34. Nagpoor.[1]														
35. Dum-dum.	January	238	132	66	53	37	74	118	283	...	N. 23° 0′ W.	.44		
	February	103	122	154	75	75	117	159	196	...	N. 37 0 W.	.15		
	March	46	75	79	176	197	281	79	67	...	S. 10 0 W.	.38		
	April	9	33	29	163	326	284	117	38	...	S. 17 0 W.	.61		
	May	4	29	91	226	358	209	49	33	...	S. 12 0 E.	.63		
	June	0	30	244	159	197	250	90	30	...	S. 11 0 E.	.45		
	July	8	20	177	258	198	280	89	20	...	S. 12 0 E.	.52		
	August	0	73	238	226	117	246	81	20	...	S. 25 0 E.	.42		
	September	21	91	207	266	91	232	71	21	...	S. 31 0 E.	.40		
	October	113	113	64	81	73	165	97	294	...	N. 46 0 W.	.31		
	November	332	128	21	25	4	29	54	407	...	N. 19 0 W.	.71		
	December	295	126	22	10	0	14	120	414	...	N. 25 0 W.	.73		
	Spring	59	137	199	565	881	774	245	138					
	Summer	8	123	659	643	512	776	260	70					
	Autumn	466	332	292	372	168	426	222	722					
	Winter	636	380	242	138	112	205	397	893					
	The year[2]	...	...	...	...	...	...	...	...	...	S. 26 0 W.	.13		
36. Calcutta.	Spring	4	2	8	9	35	13	4	3	...	S. 0 37 E.	.55	S. ½°E.	.39
	Summer	4	4	11	14	29	12	5	2	...	S. 12 43 E.	.49½	S. 18 E.	.35
	Autumn	21	7	9	7	12	6	9	7	...	N. 4 11 E.	.12½	N. 1½ E.	.28
	Winter	27	6	5	2	11	5	9	9	...	N. 20 50 W.	.31½	N. 14½ W.	.46
	The year	56	19	33	32	87	36	27	21	...	S. 1 59 E.	.16½		
37. Nos. 35 and 36 combined.	Spring	63	139	207	574	916	787	249	141					
	Summer	12	127	670	657	541	788	265	72					
	Autumn	487	339	301	379	180	432	231	729					
	Winter	663	386	247	140	123	210	406	902					
	The year	1225	991	1425	1750	1760	2217	1151	1844					
38. Bancoora.[1]														
39. Akyab.	Spring	7	8	12	5	7	16	20	18	0				
	Summer	2	4	11	19	22	24	6	3	1				
	Autumn	7	12	10	13	18	10	7	10	4				
	Winter	6	25	6	6	2	5	14	14	12				
	The year	22	49	39	43	49	55	47	45	17				

[1] The observers report the following as the prevailing directions of the wind in the different months of the year at these places.

	January.	February.	March.	April.	May.	June.
Bancoora	N. W.	W. S. W.	W. N. W.	West	West	West
Nagpoor	East	Variable	Variable	Westerly		West

	July.	August.	September.	October.	November.	December.
Bancoora	East	West	West	N. W.	N. W.	N. W.
Nagpoor	West	West	West	Northerly	N. E.	Variable

[2] Computed from the resultants for the seasons.

(Nos. 40 to 45.) **Bay of Bengal, China, China Sea, and Pacific Ocean.**
West of longitude 180°.

Observed at the following places, viz.:—

Bay of Bengal, for an aggregate period of over one year, and collected and classified at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

China Sea, for an aggregate period of nearly two years, and collected and classified at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Hongkong, China, for a period of five years, 1853 to 1859.

Victoria Peak, Hongkong, obs. of the Royal Engineers.

Pacific Ocean, for an aggregate period of one year, collected and classified as above.

(Nos. 40 to 45.) **Bay of Bengal, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
40. Bay of Bengal.	Spring	8	3	1	2	1	1	6	8	15	54	85	16	11	4	2	2	2	S. 38° 15′ W.	.73	....	...	74
	Summer	1	0	3	0	0	3	7	5	40	32	74	30	3	0	2	0	4	S. 31 19 W.	.80	....	...	68
	Autumn	38	26	34	19	14	14	24	24	16	22	48	19	20	10	24	35	16	N. 31 15 W.	.07	....	...	134
	Winter	51	65	71	8	7	8	8	9	18	13	20	21	9	9	16	18	21	N. 18 9 E.	.38	....	...	124
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 12 W.	.29	....	...	400
41. China Sea, long. 106° to 115° E.	Spring	10	6	31	28	36	26	55	35	40	10	10	2	2	0	1	1	1	S. 56 4 E.	.60	....	...	98
	Summer	2	4	19	17	23	13	27	21	53	34	44	17	15	4	8	6	4	S. 2 48 E.	.41	....	...	104
	Autumn	25	20	99	43	50	12	21	3	3	1	5	6	5	3	19	1	11	N. 55 11 E.	.61	....	...	109
	Winter	42	26	59	7	14	4	8	6	4	0	0	0	3	2	7	2	0	N. 35 54 E.	.68	....	...	61
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 50 E.	.35	....	...	372
42. Hongkong.	January	3	...	7	...	14	...	2	...	0	...	0	...	2	...	1	...	2					
	February	1	...	9	...	10	...	1	...	1	...	1	...	3	...	0	...	2					
	March	1	...	8	...	8	...	7	...	1	...	3	...	0	...	2	...	1					
	April	0	...	8	...	6	...	10	...	1	...	2	...	1	...	0	...	2					
	May	0	...	6	...	7	...	10	...	0	...	3	...	1	...	2	...	2					
	June	1	...	3	...	5	...	8	...	1	...	7	...	2	...	2	...	1					
	July	1	...	2	...	7	...	8	...	2	...	7	...	1	...	2	...	1					
	August	1	...	4	...	5	...	4	...	1	...	8	...	4	...	1	...	3					
	September	2	...	4	...	7	...	6	...	1	...	3	...	1	...	3	...	3					
	October	2	...	11	...	10	...	2	...	1	...	0	...	2	...	2	...	1					
	November	3	...	10	...	7	...	3	...	0	...	1	...	1	...	3	...	2					
	December	3	...	9	...	11	...	2	...	0	...	0	...	1	...	2	...	3					
	Spring	1	...	22	...	21	...	27	...	2	...	8	...	2	...	4	...	5	S. 80 47 E.	.50	S. 43° E.	.15	
	Summer	3	...	9	...	17	...	20	...	4	...	22	...	7	...	5	...	5	S. 28 55 E.	.26	S. 44½ W.	.37	
	Autumn	7	...	25	...	24	...	11	...	2	...	4	...	4	...	8	...	6	N. 64 23 E.	.45	N. 6 E.	.16	
	Winter	7	...	25	...	35	...	5	...	1	...	1	...	6	...	3	...	7	N. 65 33 E.	.58	N. 34½ E.	.25	
	The year	18	...	81	...	97	...	63	...	9	...	35	...	19	...	20	...	23	N. 85 29 E.	.39			
42(*a*). Victoria Peak. See Addendum.																							
43. China Sea, long. 115° to 120° E.	Spring	22	27	50	30	45	17	12	13	11	8	10	0	3	0	3	12	0	N. 66 53 E.	.53	....	...	88
	Summer	3	2	16	8	5	5	20	7	22	19	35	20	4	0	1	0	0	S. 7 10 W.	.45	....	...	56
	Autumn	23	29	99	52	20	5	11	0	6	2	9	15	10	1	4	5	2	N. 46 40 E.	.59	....	...	98
	Winter	27	36	116	43	16	0	8	2	1	4	0	0	1	0	0	3	2	N. 45 59 E.	.83	....	...	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 63 0 E.	.41	....	...	328
44. Pacific Ocean, long. 120° to 130° E.	Spring	27	15	42	34	46	17	14	8	12	3	5	1	8	3	4	8	6	N. 65 52 E.	.52	N. 74½ E.	.04	84
	Summer	0	1	7	3	8	0	5	6	7	3	12	4	3	0	1	0	1	S. 13 1 E.	.36	S. 32½ W.	.65	20
	Autumn	9	19	62	18	21	4	2	2	2	1	6	0	3	1	0	1	3	N. 52 5 E.	.71	N. 34¼ E.	.36	51
	Winter	15	32	98	34	18	7	13	0	2	1	2	0	0	0	0	6	1	N. 50 46 E.	.80	N. 31½ E.	.35½	76
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 65 0 E.	.48	....	...	231
45. Pacific Ocean, long. 130° to 150° E.	Spring	4	31	60	73	57	43	32	19	10	2	16	3	1	1	9	7	7	N. 81 33 E.	.60	N. 85 E.	.26	125
	Summer	0	0	0	0	3	0	3	0	6	0	6	3	6	0	0	0	0	S. 31 30 W.	.65	S. 47½ W.	.91	9
	Autumn	3	6	10	12	6	2	0	0	1	0	4	0	0	0	0	0	0	N. 58 27 E.	.65	N. 36½ E.	.35	15
	Winter	18	3	34	13	14	6	6	0	3	0	1	0	3	0	0	1	6	N. 54 38 E.	.65	N. 32½ E.	.37	36
	The year[1]	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 21 E.	.34	....	...	185

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 14.

	Time of the year.	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.
42(*a*). Victoria Peak (Hongkong).	January	3	4	21	2	0	0	0	1
	February	3	5	18	1	1	0	0	0
	March	1	2	17	6	3	1	0	1
	April	0	1	10	5	9	4	0	1
	May	0	0	11	3	10	6	1	0
	June	0	0	4	6	16	5	0	0
	July	0	0	2	4	12	10	1	1
	August	0	0	4	2	9	13	1	2
	September	5	3	13	4	3	2	0	0
	October	4	7	15	2	1	1	0	1
	November	10	9	11	0	0	0	0	0
	December	6	8	14	1	0	0	0	1
	Spring	1	3	38	14	22	11	1	2
	Summer	0	0	10	12	37	28	2	3
	Autumn	19	19	39	6	4	3	0	1
	Winter	12	17	53	4	1	0	0	2
	The year	32	39	140	36	64	42	3	8

ZONE No. 15.

LATITUDE 15° TO 20° NORTH.

The data for the study of the winds of this zone consist of observations made at over 26 stations on land, for an aggregate period of over 39 years: at sea for 26 years 3 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	4074 days = 10 years 10 months.
Mexico,	10	4 years.
West Indies,	5	3 years.
Atlantic Ocean,	....	nearly 7 years.
Bay of Bengal,	....	1740 days = 4 years 8 months.
China Sea,	....	1350 days = 3 years 7 months.
Africa,	8 +	1 year 4 months.
Asia,	3	13 years 7 months.
Red Sea,	....	24 days.

(Nos. 1 to 5.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of 3451 days, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
1. Long. 150° to 165° W.	Spring	65	74	600	249	248	70	101	10	46	8	40	3	50	4	21	35	57	N. 61° 49′ E.	.64	S. 61°49′W.	.06	560
	Summer	1	2	96	38	35	0	10	0	3	0	0	2	4	0	0	0	9	N. 62 15 E.	.79	N. 80½ E.	.09	67
	Autumn	66	56	635	384	452	82	78	21	13	10	29	2	15	8	40	23	112	N. 65 7 E.	.72	S. 48½ E.	.05	675
	Winter	59	36	234	128	139	9	38	1	26	3	15	2	10	1	29	7	36	N. 58 15 E.	.64	S. 87½ W.	.07	258
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 49 E.	.70	....	...	1560
2. Long. 135° to 150° W.	Spring	42	97	681	187	188	32	44	9	3	4	5	0	4	9	3	0	8	N. 55 47 E.	.85	S. 30 E.	.08	439
	Summer	7	17	53	23	2	0	0	0	0	0	0	0	0	0	1	0	0	N. 43 40 E.	.93	N. 6¼ W.	.14	34
	Autumn	1	23	104	53	7	12	0	0	0	0	0	0	0	0	0	0	0	N. 53 17 E.	.93	N. 81 E.	.09	67
	Winter	25	28	186	71	54	8	10	1	4	0	9	0	6	5	10	10	0	N. 50 20 E.	.75	S. 53¼ W.	.11	142
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 50 40 E.	.86	....	...	682
3. Long. 120° to 135° W.	Spring	49	64	128	9	22	1	10	1	1	0	3	0	0	0	13	5	2	N. 34 30 E.	.80	S. 17½ W.	.02	103
	Summer	69	24	77	12	5	0	5	0	1	1	2	0	1	3	1	10	11	N. 25 21 E.	.17	S. 36¾ W.	.66	74
	Autumn	4	27	59	8	3	3	0	0	0	0	0	0	0	0	0	18	0	N. 33 13 E.	.87	N. 18 E.	.05	41
	Winter	20	24	140	39	19	3	3	0	0	0	0	0	1	0	6	3	0	N. 45 20 E.	.88	S. 70 E.	.16	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 34 58 E.	.82	....	...	304
4. Long. 110° to 120° W.	Spring	23	7	35	0	9	3	0	0	0	0	0	0	0	0	3	24	8	N. 19 50 E.	.73	N. 14 E.	.15	37
	Summer	38	19	27	1	11	3	11	0	3	1	20	6	34	0	16	30	17	N. 19 43 W.	.39	S. 63¼ W.	.38	79
	Autumn	41	15	58	23	10	10	11	1	7	0	3	3	6	0	23	5	5	N. 32 50 E.	.55	S. 48 E.	.12	74
	Winter	43	41	109	18	19	4	0	0	0	0	0	0	3	0	15	8	3	N. 32 29 E.	.82	N. 56¼ E.	.28	88
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 21 15 E.	.59	....	...	278
5. Long. 90° to 110° W.	Spring	31	8	6	0	0	0	1	0	3	3	8	2	28	33	65	20	12	N. 46 9 W.	.70	N. 78¼ W.	.24	73
	Summer	5	7	8	1	6	11	8	0	7	1	2	1	5	1	7	4	6	N. 66 30 E.	.21	S. 55½ E.	.41	27
	Autumn	69	9	50	13	20	12	39	4	15	0	14	4	44	30	200	37	56	N. 26 17 W.	.43	N. 35 W.	.08	205
	Winter	128	15	126	39	55	21	40	2	20	2	65	12	85	39	192	36	88	N. 16 25 W.	.34	N. 77½ E.	.05	322
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 24 50 W.	.35	....	...	627

[1] Computed from the resultants for the seasons.

(Nos. 6 to 13.) **Southern Mexico and Honduras.**

Computed from observations made at the following places, viz. :—

City of Mexico, by Louis Berlandier, for 92 days in summer and 95 in autumn, during transient sojourns in the city, in the years 1819 to 1825, and by Prof. L. C. Ervendberg, during the first eleven months of 1856. The latter were reported to the Smithsonian Institution.

Cordova, by J. A. Hicto.

Frontera Tabasco.

Vera Cruz, by officers of the Medical Department of the United States Army from June, 1847, to August, 1848, inclusive, except February; and by an observer whose name is not preserved, from August to December inclusive in 1856, and during the months of May, 1857. The latter observer appends a note saying that "the winds recorded in the column headed N. W. were generally N. N. W.," and, therefore, in preparing the following table they were distributed equally between the columns headed North and N. W.

Mazatlan, Mexico, 42 days in January and February, 1848.

Minatitlan, Mexico, 12 months in 1858 and 1859.

Mirador, Mexico, 12 months in 1858 and 1859.

San Juan Bautiste, Mexico, 12 months in 1858 and 1859.

Truxillo, Honduras, by E. Purdot, July to December inclusive, 1854.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
6. City of Mexico in the year 1856. Surface wind. No. of observations.	Spring	5	11	3	102	105	41	6	3	0	S. 13° 28′ E.	.71	S. 6½° E.	.56	92
	Summer	59	34	29	81	13	8	4	42	4	N. 62 36 E.	.29	N. 27½ E.	.31	92
	Autumn	44	50	65	11	6	0	11	86	0	N. 16 2 E.	.48	N. 16 E.	.58	91
	Winter	4	6	9	30	30	29	20	4	7	S. 17 18 W.	.45	S. 39 W.	.38	60
	The year[1]	...	...	...	...	...	...	...	...	...	S. 38 22 E.	.17			
No. of miles.	Spring	18	63	12	384	330	182	32	6	...	S. 13 49 E.	.66			
	Summer	161	84	68	272	28	18	10	90	...	N. 77 41 E.	.32			
	Autumn	160	143	226	69	20	0	58	222	...	N. 24 44 E.	.43			
	Winter	20	18	50	259	166	201	147	33	...	S. 8 42 W.	.47			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 43 9 E.	.27			
M'n vel. in miles p. h'r.	Spring	3.60	5.73	6.00	3.84	3.14	4.79	5.33	3.00						
	Summer	2.73	2.47	2.34	3.36	2.15	2.25	2.50	2.25						
	Autumn	3.64	2.92	3.48	6.27	3.33	0	5.80	2.64						
	Winter	5.00	3.00	5.56	8.63	5.53	6.93	7.35	11.00						
Motion of clouds. No. of observations.	Spring	13	5	18	2	3	0	3	1	...	N. 56 18 E.	.51½	N. 69 E.	.25	
	Summer	13	7	13	11	4	4	5	12	..	N. 38 30 E.	.26	N. 71 W.	.03	
	Autumn	12	2	3	2	6	0	2	17	..	N. 24 27 W.	.45	N. 61 W.	.43	
	Winter	3	0	5	3	2	1	1	0	..	S. 71 19 E.	.38	S. 29 E.	.36	
	The year[1]	...	...	...	...	...	...	...	...	...	N. 44 35 E.	.27			
7. City of Mexico. Aggregate number of observations.	Spring	18	16	21	104	108	41	9	4	0	S. 20 2 E.	.59	S. 5 E.	.55	
	Summer	254	355	96	111	34	17	59	111	64	N. 31 1 E.	.49	N. 13 E.	.43	
	Autumn	111	129	85	13	12	0	19	111	7	N. 18 43 E.	.56	N. 2½ E.	.53	
	Winter	7	6	14	33	32	29	21	4	7	S. 2 33 W.	.40½	S. 23 W.	.44	
	The year[1]	....	...	...	...	...	...	...	...	...	S. 89 26 E.	.15½			

From this table we obtain the following summary of results :—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	3.82	2.73	3.34	6.82	4.18
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	2.75	.81	1.61	3.06	.79
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	2.54	.88	1.43	3.19	1.11
Excess of the latter over the former	—.21	+.07	—.18	+.13	+.32

[1] Computed from the resultants for the seasons.

(Nos. 8 to 13.) **Southern Mexico and Honduras.**—*Continued.*

Place and kind of observations.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
8. Cordova.	Spring	33	126	87	3	45	3	14	13	19	30	55	3	42	8	31	7	33	N. 35° 32′ E.	.36½	N. 74° W.	.07	
	Summer	6	152	100	2	112	5	15	19	0	17	29	2	25	4	41	15	8	N. 53 29 E.	.49	N. 77 E.	.12	
	Autumn	93	122	133	3	40	4	14	13	6	21	34	2	18	4	27	10	2	N. 46 24 E.	.39½	N. 71 E.	.02	
	Winter	61	105	108	1	41	7	21	11	33	35	64	1	16	3	30	3	1	N. 45 18 E.	.28	S. 47 W.	.10	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 44 12 E.	.36			
9. Mirador. Surface winds.	Spring	46	...	376	...	462	...	337	...	266	...	491	...	229	...	108	...	5	S. 34 10 E.	.24			
	Summer	104	...	567	...	466	...	257	...	207	...	544	...	241	...	163	...	25	S. 63 27 E.	.13			
	Autumn	83	...	433	...	399	...	332	...	219	...	628	...	201	...	82	...	0	S. 27 29 E.	.21			
	Winter	43	...	379	...	515	...	457	...	245	...	533	...	265	...	66	...	24	S. 39 40 E.	.28			
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 44 E.	.17			
Motion of clouds.	Spring	91	...	176	...	264	...	375	...	460	...	377	...	106	...	82	...	...	S. 17 14 E.	.39	S. 35 W.	.25	
	Summer	200	...	489	...	536	...	508	...	241	...	149	...	56	...	163	...	...	S. 87 21 E.	.41	N. 45 E.	.21	
	Autumn	308	...	497	...	374	...	435	...	302	...	140	...	63	...	165	...	...	N. 87 43 E.	.33	N. 21 E.	.19	
	Winter	145	...	218	...	227	...	496	...	436	...	238	...	70	...	115	...	...	S. 35 39 E.	.35	S. 27 W.	.14	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 38 E.	.31			
The two combined.	Spring	137	...	552	...	726	...	712	...	726	...	868	...	335	...	190	...	5	S. 24 14 E.	.30½	S. 23 W.	.08	
	Summer	304	...	1056	...	1002	...	765	...	448	...	693	...	297	...	326	...	25	S. 81 10 E.	.26	N. 31 E.	.19	
	Autumn	391	...	912	...	773	...	767	...	521	...	768	...	264	...	247	...	0	S. 67 58 E.	.23	N. 24 E.	.13	
	Winter	188	...	597	...	742	...	953	...	681	...	771	...	335	...	181	...	24	S. 6 7 E.	.40½	S. 30 W.	.23	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 23 E.	.20			
10. Vera Cruz.	Spring	51	...	3	...	54	...	0	...	49	...	6	...	6	...	3	...	2	N. 87 23 E.	.25	....	...	123
	Summer	113	...	36	...	51	...	92	...	42	...	25	...	36	...	6	...	6	N. 78 0 E.	.21	....	...	237
	Autumn	194	...	75	...	60	...	27	...	22	...	25	...	61	...	47	...	45	N. 5 13 E.	.40	....	...	182
	Winter	71	...	15	...	28	...	13	..	18	...	3	...	6	...	19	...	16	N. 21 46 E.?	.37½	....	...	93
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 38 22 E.	.25½	....	...	635
11. Mazatlan.	Winter	20	...	8	...	1	...	6	...	7	...	3	...	15	...	8	...	34	N. 37 8 W.??	.28	....	...	42
12. N'th'n coast of Tehuantepec.[1] Surface winds.	Spring	148	...	192	...	73	...	68	...	62	...	90	...	26	...	96	...	345	N. 29 4 E.	.18½			
	Summer	69	...	227	...	109	...	53	...	13	...	20	...	10	...	34	...	196	N. 53 53 E.	.44			
	Autumn	86	...	171	...	41	...	37	...	34	...	70	...	7	...	43	...	144	N. 38 19 E.	.26			
	Winter	55	...	96	...	70	...	38	...	19	...	11	...	7	...	36	...	141	N. 52 39 E.	.32½			
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 46 27 E.	.30			
Motion of clouds.	Spring	64	...	65	...	31	...	41	...	9	...	13	...	7	...	64	...	...	N. 24 13 E.	.40	N. 75 W.	.27	
	Summer	9	...	22	...	87	...	37	...	0	...	0	...	0	...	10	...	...	N. 87 25 E.	.74	S. 50 E.	.40	
	Autumn	50	...	44	...	32	...	13	...	5	...	3	...	1	...	15	...	...	N. 37 36 E.	.58	N. 23 W.	.19	
	Winter	36	...	31	...	36	...	29	...	0	...	2	...	3	...	10	...	...	N. 57 11 E.	.54	N. 74 E.	.02	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 55 52 E.	.51½			
The two combined.	Spring	212	...	257	...	104	...	109	...	71	...	103	...	33	...	160	...	345	N. 26 34 E.	.28	N. 83 W.	.14	
	Summer	78	...	249	...	196	...	90	...	13	...	20	...	10	...	44	...	196	N. 62 52 E.	.48	S. 84½ E.	.16	
	Autumn	136	...	215	...	73	...	50	...	39	...	73	...	8	...	58	...	144	N. 37 58 E.	.32	N. 80 W.	.07	
	Winter	91	...	127	...	106	...	67	...	19	...	13	...	10	...	46	...	141	N. 54 5 E.	.38	S. 85 E.	.05	
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 48 25 E.	.36			
13. Truxillo. Surface winds.	Summer	0	...	6	...	15	...	8	...	1	...	1	...	4	...	0	...	6	S. 81 13 E.	.50			
	Autumn	3	...	38	...	11	...	0	...	0	...	0	...	42	...	22	...	45	N. 23 26 W.	.35			
	Winter	3	...	2	...	5	...	1	...	0	...	0	...	25	...	2	...	13	N. 75 8 W.	.39			
Motion of clouds.	August	5	...	4	...	0	...	0	...	7	...	0	...	0	...	0	...	...	N. 73 39 E.	.18½			
The two combined.	Summer	5	...	10	...	15	...	8	...	8	...	1	...	4	...	0	...	6	S. 84 19 E.	.40½			

[1] Observed at Frontera, Minatitlan and San Juan Bautiste.

[2] Computed from the resultants for the seasons.

(Nos. 14 to 18.) **West Indies.**

Observed as follows:—

Est San Ysidro,

Pouce, Porto Rico, January and February, 1844.

St. Domingo.

Sombrero, Antilles.

Up Park Camp, Jamaica.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
			North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
14. Up Park Camp.		October, November	16	70	11	117	10	2	2	16	...	S. 88° 42′ E.	.58½		
		December	40	22	2	50	2	0	2	6	...	N. 4 35 E.	.38		
15. St. Domingo.	Surface winds.	Summer	150	14	0	20	76	0	0	0	2	N. 17 39 E.	.28½		
		September	59	2	0	2	23	1	0	0	0	N. 2 56 E.	.40½		
	Motion of clouds.	Summer	1	10	125	21	16	0	0	0	...	S. 81 27 E.	.91½		
		September	0	0	0	0	0	0	0	0	...				
	Aggregate of the two.	Summer	151	24	125	231	92	0	0	0	2	S 73 59 E.	.51		
		September	59	2	0	2	23	1	0	0	0	N. 3 27 E.	.40½		
16. Porto Rico.	Surface winds.	January, February	128	73	148	89	12	0	2	7	68	N. 66 47 E.	.53		
		March, April	18	48	46	29	4	2	0	3	33	N. 73 40 E.	.55		
	Motion of clouds.	January, February	4	29	23	43	6	0	0	0	...	S. 80 56 E.	.71		
		March, April	15	45	40	27	3	2	0	3	...	N. 73 45 E.	.69		
	Aggregate of the two.	January, February	132	102	171	132	18	0	2	7	68	N. 73 29 E.	.54		
		March, April	33	93	86	56	7	4	0	6	33	N. 73 48 E.	.60		
17. Sombrero.	Surface winds.	Spring	62	207	77	151	7	8	0	11	2	N. 73 0 E.	.06		
		Summer	8	310	138	83	9	0	0	1	0	N. 68 54 E.	.81		
		Autumn	3	196	100	146	4	1	0	0	4	N. 85 26 E.	.75½		
		Winter	7	315	38	48	0	4	1	3	6	N. 55 57 E.	.83		
		The year[1]	...	...	...	...	...	...	...	...	...	N 70 18 E.	.75		
	Motion of clouds.	Spring	4	49	38	48	4	10	23	15	...	N. 86 18 E.	.34½		
		Summer	0	44	113	50	6	9	7	1	...	S. 84 32 E.	.72		
		Autumn	14	49	57	52	7	9	15	11	...	N. 86 23 E.	.46½		
		Winter	12	51	50	34	6	11	9	7	...	N. 80 15 E.	.48½		
		The year[1]	...	...	...	...	...	...	...	...	..	N. 88 11 E.	.50		
	Aggregate of the two.	Spring	66	256	115	199	11	18	23	26	2	N. 75 14 E.	.55		
		Summer	8	354	251	133	15	9	7	2	0	N. 76 2 E.	.77		
		Autumn	17	245	157	198	11	10	15	11	4	N. 84 49 E.	.66		
		Winter	19	366	88	82	6	15	10	10	6	N. 61 47 E.	.71		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 73 59 E.	.67		
18. Nos. 14 to 17 combined.	Surface winds.	Spring	80	255	123	180	11	10	0	14	35	N. 73 12 E.	.61		
		Summer	158	324	138	293	85	0	0	1	2	N. 80 32 E.	.58		
		Autumn	19	266	111	263	14	3	2	16	4	N. 88 1 E.	.67		
		Winter	174	130	188	187	14	4	5	16	74	N. 72 42 E.	.52		
		The year[1]	...	...	...	...	...	...	...	...	...	N. 79 5 E.	.59		
	Motion of clouds.	Spring	19	94	78	75	7	12	23	18	...	N. 79 2 E.	.48	N. 27° E.	.10
		Summer	1	54	238	71	22	9	7	1	...	S. 82 56 E.	.78	S. 67 E.	.36
		Autumn	14	49	57	52	7	9	15	11	...	N. 85 58 E.	.42	N. 33 W.	.03
		Winter	16	80	73	77	12	11	9	7	...	N. 88 50 E.	.05½	N. ½ E.	.37
		The year[1]	...	...	...	...	...	...	...	...	...	N. 89 41 E.	.43		
	Aggregate of the two.	Spring	99	349	201	255	18	22	23	32	35	N. 77 12 E.	.56	N. 31½ W.	.05½
		Summer	159	378	376	364	107	9	7	2	2	N. 86 19 E.	.60½	S. 37½ E.	.05
		Autumn	33	315	168	315	21	12	17	27	4	N. 87 43 E.	.62½	S. 41½ E.	.08
		Winter	190	210	261	264	26	15	14	23	74	N. 76 41 E.	.53	N. 51 W.	.07
		The year[1]	...	...	...	...	...	...	...	...	...	N. 81 53 E.	.58		

[1] Computed from the resultants for the seasons.

(Nos. 19 to 28.) **Atlantic Ocean.**

Computed from observations for an average period of nearly seven years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
	Spring	5	9	49	21	67	13	16	4	2	3	0	3	4	2	2	1	4	N. 77° 15′ E.	.70	N. 37¼° W.	.08	68
19.	Summer	0	0	5	10	23	1	3	0	4	0	0	0	0	0	0	0	0	N. 88 43 E.	.84	S. 56 E.	.12½	15
Long. 60°	Autumn	0	0	24	7	22	7	23	5	6	3	0	0	0	0	0	0	3	N 79 44 E.	.71	N. 47½ W.	.05	33
to 80° W.	Winter	14	2	56	12	46	8	11	0	0	0	0	0	0	0	0	9	5	N. 66 26 E.	.80	N. ½ W.	.24	51
	The year[1]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 58 E.	.74	....	...	167
	Spring	18	11	77	74	70	20	44	3	9	2	7	0	1	1	7	1	10	N. 77 33 E.	.70	S. 30¾ W.	.09	116
20.	Summer	1	0	51	41	23	15	1	0	0	0	0	0	0	0	0	0	0	N. 67 27 E.	.91	N. 39¼ E.	.16	44
Long. 55°	Autumn	1	1	13	42	34	16	20	4	2	0	0	0	0	0	0	0	5	N. 88 52 E.	.82	S. 22 E.	.23	46
to 60° W.	Winter	6	25	62	21	19	5	7	3	2	1	0	0	1	0	0	3	1	N. 54 33 E.	.79	N. 22½ W.	.25	52
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 72 2 E.	.78	....	...	258
	Spring	12	19	214	106	109	37	41	5	13	4	9	1	7	0	3	0	10	N. 65 11 E.	.77	N. 23½ W.	.02	197
21.	Summer	2	20	140	88	53	15	3	0	0	0	0	0	0	0	0	0	0	N. 60 30 E.	.92	N. 33 E.	.17	107
Long. 50°	Autumn	1	4	59	54	31	21	15	3	15	0	4	0	3	0	0	0	2	N. 79 50 E.	.71	S. 2 W.	.18	71
to 55° W.	Winter	10	26	108	42	49	16	12	0	2	0	1	0	0	0	2	1	4	N. 60 27 E.	82	N. 3½ E.	.10	91
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 55 E.	.79	....	...	466
	Spring	13	6	143	53	51	28	14	4	6	1	1	0	0	4	3	0	1	N. 68 28 E.	.77	S. 50¾ E.	.06	109
22.	Summer	3	10	94	44	31	4	8	5	4	0	0	5	0	0	6	0	0	N. 60 23 E.	.77	N. 2½ E.	.06	71
Long. 45°	Autumn	4	15	82	43	51	19	10	4	6	2	7	0	3	1	4	0	9	N. 68 58 E.	.69	S. 7¼ W.	.07	87
to 50° W.	Winter	5	3	33	18	14	7	4	1	2	0	1	1	0	0	1	1	3	N. 64 7 E.	.73	....	...	31
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 22 E.	.74	....	...	298
	January	12	7	70	27	33	9	13	0	4	0	2	0	0	0	0	0	4	N. 64 21 E.	.78	N. 12½ W.	.07	60
	February	6	40	109	44	55	14	9	1	0	0	0	0	0	0	1	1	3	N. 58 25 E.	.86	N. 6¾ E.	.1[illegible]	94
	March	22	26	143	68	117	32	26	3	8	1	3	0	3	5	7	2	4	N. 67 21 E.	.75	N. 54¼ W.	.04	156
	April	13	15	167	82	97	42	67	9	18	9	8	4	9	2	8	0	15	N. 77 27 E.	.64	S. 39 W.	.16	189
	May	5	4	173	103	83	24	22	4	4	0	6	0	0	0	0	0	6	N. 68 21 E.	.84	N. 50¾ E.	.07	145
23.	June	2	14	126	74	31	13	4	0	0	0	0	0	0	0	0	0	0	N. 60 20 E.	.95	N. 26½ E.	.22	88
Long. 45°	July	3	7	79	67	50	5	1	0	3	0	0	0	0	0	6	0	0	N. 62 25 E.	.87½	N. 18¾ E.	.15	74
to 80° W.	August	1	9	85	42	49	17	10	5	4	0	0	5	0	0	0	0	0	N. 70 38 E.	.80	S. 83 E.	.03	76
	September	2	3	38	42	36	16	17	2	12	1	2	0	1	1	1	0	0	N. 83 32 E.	.73	S. ¾ E.	.18	58
	October	4	8	72	45	59	22	41	8	6	4	6	0	2	0	1	0	9	N. 83 49 E.	.70	S. 8¼ W.	.20	96
	November	1	9	68	59	43	22	23	6	11	0	3	0	3	0	2	0	10	N. 75 48 E.	.72	S. 14½ W.	.10	87
	December	17	9	80	21	40	13	12	3	2	1	1	1	1	0	2	4	6	N. 61 5 E.	.73	N. 46½ W.	.12	71
	The year	88	151	1210	675	693	229	245	41	72	16	31	10	19	8	28	7	57	N. 68 43 E.	.77	....	...	1194
	Spring	3	28	50	35	29	12	12	1	0	0	0	0	0	0	0	1	5	N. 63 28 E.	.81	....	...	59
24.	Summer	2	24	78	110	25	6	2	2	0	0	2	2	0	2	0	5	0	N. 58 9 E.	.81	....	...	87
Long. 35°	Autumn	7	19	74	74	42	37	10	6	4	0	1	0	1	0	0	2	7	N. 70 18 E.	.85	....	...	95
to 45° W.	Winter	2	10	34	25	22	7	3	0	4	0	1	0	1	0	0	5	1	N. 62 51 E.	.76	....	...	38
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	N. 63 34 E.	.80	....	...	279
	Spring	4	31	48	53	8	0	2	5	0	0	0	1	2	0	0	4	0	N. 50 23 E.	.83	N. 43¾ W.	.08	53
25.	Summer	1	52	86	75	12	3	0	0	1	1	0	0	0	0	0	7	5	N. 48 24 E.	.88	N. 14½ W.	.10	82
Long. 30°	Autumn	5	28	57	123	24	21	5	5	2	0	0	0	0	0	0	2	10	N. 64 25 E.	.84	S. 29¼ E.	.13	94
to 35° W.	Winter	2	32	37	65	26	13	1	2	0	1	0	0	0	0	0	2	9	N. 60 58 E.	.82	S. 16 E.	.07½	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 55 54 E.	.84	....	...	292
	Spring	9	45	63	32	19	2	2	1	0	0	0	0	0	0	1	8	2	N. 44 27 E.	.85	N. 28¼ E.	.09	61
26.	Summer	31	202	107	78	23	9	1	7	0	3	4	0	1	1	2	16	8	N. 36 11 E.	.82	N. 25¼ W.	.15	164
Long. 25°	Autumn	20	87	72	101	36	16	12	9	5	5	3	2	6	4	4	9	8	N. 52 34 E.	.69	S. 1 W.	.10	133
to 30° W.	Winter	9	45	54	75	17	17	3	6	1	1	2	7	3	3	0	7	1	N. 54 8 E.	.74	S. 28 E.	.11	84
	The year[1]	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	N. 46 23 E.	.76	....	...	442
	Spring	10	32	10	11	4	0	0	0	4	5	3	2	2	8	2	13	0	N. 11 58 E.	.54	S. 71 W.	.28	35
27.	Summer	36	231	40	42	15	20	1	4	5	0	0	9	0	3	6	21	17	N. 42 20 E.	.91	N. 76½ E.	.25	150
Long. 15°	Autumn	12	110	30	32	5	11	0	0	0	4	0	4	0	6	2	13	7	N. 30 39 E.	.76	S. 74½ E.	.11½	79
to 25° W.	Winter	11	68	23	24	4	3	0	3	2	3	2	1	1	2	2	10	2	N. 31 15 E.	.76	N. 41 E.	.05	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 31 3 E.	.72	....	...	318
	January	9	48	56	59	23	13	0	2	2	1	3	5	1	1	0	9	1	N. 50 42 E.	.75	S. 22 E.	.08½	78
	February	11	53	32	51	18	5	2	3	3	3	2	1	1	1	2	9	7	N. 46 48 E.	.71	S. 72½ W.	.07	68
	March	14	36	61	48	23	3	12	6	2	2	3	2	2	2	2	16	1	N. 49 29 E.	.68	S. 44½ W.	.09	78
	April	8	37	62	46	21	5	4	1	2	0	0	1	0	4	0	7	3	N. 49 28 E.	.80	N. 58½ E	03	67
	May	4	63	48	37	16	6	0	0	0	2	0	0	2	3	1	3	3	N. 43 50 E.	.81	N. 17½ W.	.08	63
28.	June	10	115	112	87	19	0	2	0	0	0	0	0	0	1	1	16	2	N. 42 8 E.	.90	N. 6¾ E.	.16	122
Long. 15°	July	39	210	112	114	20	21	0	2	5	0	0	8	0	0	3	3	20	N. 41 26 E.	.99	N. 15¼ E.	.24	186
to 45° W.	August	20	185	87	104	36	17	2	11	1	5	5	3	1	4	4	31	8	N. 40 49 E.	.75	N. 58 W.	.11	175
	September	18	94	95	84	81	28	10	5	2	3	2	0	0	3	0	14	6	N. 54 14 E.	.76	S. 7½ E.	.07	132
	October	22	74	66	103	30	30	10	10	3	3	2	5	7	7	1	7	12	N. 54 50 E.	.67	S. 16½ W.	.12	131
	November	4	76	72	143	50	27	7	5	6	3	0	1	0	1	5	5	15	N. 60 50 E.	.78	S. 37½ E.	.16	140
	December	4	54	60	79	28	22	5	6	2	1	0	2	3	3	0	6	5	N. 58 5 E.	.75	S. 26 E.	.12	93
	The year	165	1045	863	955	315	177	54	51	28	23	17	28	17	30	19	126	83	N. 49 1 E.	.77½	....	...	1333

[1] Computed from the resultants for the seasons.

(Nos. 29 to 32.) **Africa and Southwestern Arabia.**

Observed at the following places, viz. :—

Timbuctoo, in Soudan, where René Caillie experienced a prevalence of easterly winds during the month of May, 1822.

Dongola, Ebou Egli, Qoubouchi, Assour, Ras el Gartoum, and the intervening regions in Nubia, between the parallels of latitude 15° and 20° north, by Frederick Cailliaud, from January 11 to June 4, 1821, and from May 1 to 17, 1822.

Massowah and vicinity in Northern Abyssinia, by Rev. H. Hunter, for 42 days in the year 1778, and at the residence of M. W. Munzinger, in Massowah, from February to September inclusive in the year 1864.

Oasis Kauar, date not preserved, by Gerhard Rohlfs.

Red Sea, by Rev. H. Hunter, between the parallels of latitude 15° and 20°, for 24 days in the year 1778.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
29. Timbuctoo.	May	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	Easterly.	...	....	...	31
29(*a*). Oasis Kauar.	April May	23	...	10	...	65	...	11	...	30	...	3	...	2	...	6	...	89	S. 76° 17′ W.	.20			
	June	5	...	5	...	13	...	12	...	10	...	3	...	2	...	3	...	47	S. 62 4 E.	.21			
30. Nubia, latitude 15° to 20° N.	Spring	128	2	3	2	5	0	1	0	3	0	4	0	1	1	12	0	56	N. 0 17 W.	.63	....	...	109
	Summer	1	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	3	S. 26 34 W.	.28	....	...	4
	Winter	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	North.	1.00	....	...	49
31 and 32. Northern Abyssinia and the Red Sea.	Spring	46	...	12	...	7	...	12	...	3	...	11	...	3	...	29	...	1	N. 7 29 W.	.45	N. 52½° W.	.23	123
	Summer	3	...	10	...	0	...	10	...	0	...	2	...	4	...	9	...	0	N. 16 32 E.	.15	S. 26 W.	.18	30
	September	2	...	9	...	6	...	10	...	0	...	0	...	0	...	3	...	0	N. 78 51 E.	.59	S. 67 E.	.50	30
	Winter	27	...	12	...	10	...	2	...	1	...	6	...	2	...	29	...	4	N. 7 54 W.	.53½	N. 42 W.	.130	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	N. 21 28 E.	.33			

[1] Computed from the resultants for the seasons.

(Nos. 33 and 34.) **Arabian Sea,** longitude 50° to 74° East.

Computed from observations for an aggregate period of $1\frac{1}{2}$ years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N W.	N. N. W.	Calm or var.			
33. Longitude 50° to 70° E	Spring	2	15	10	5	13	6	12	11	7	6	20	22	7	0	18	17	0	S. 79° 13′ W.	.09	57
	Summer	0	0	0	0	0	0	0	0	3	8	50	11	16	4	6	0	0	S. 58 38 W.	.87	33
	Autumn	24	22	72	34	87	8	22	16	6	8	31	12	11	9	9	5	23	N. 70 57 E.	.38	133
	Winter	12	14	15	15	48	0	3	0	0	0	6	0	0	1	8	12	0	N. 48 19 E.	.78	43
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 7 8 W.	.02	266
34. Longitude 70° to 74° E.	Spring	7	6	10	2	0	0	0	3	2	9	12	39	24	22	42	35	1	N. 66 10 W.	.63	71
	Summer	0	7	0	0	0	0	3	2	2	0	38	96	29	19	13	13	0	S. 78 32 W.	.78	74
	Autumn	22	18	11	6	0	7	5	6	2	0	9	27	19	22	21	2	1	N. 52 42 W.	.40	59
	Winter	41	19	12	8	4	0	2	0	0	1	1	0	4	7	10	29	7	N. 0 39 W.	.71	48
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 57 44 W.	.49	252

[1] Computed from the resultants for the seasons.

(Nos. 35 and 36.) **India.**

Observed at the following places, viz.:—

Bombay, hourly during the years 1858 1859, and 1860, and 1866 to 1870 inclusive.

Duklum, during the years 1826 to 1830 inclusive.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.
		RELATIVE PREVALENCE OF WINDS FROM THE DIFFERENT POINTS OF THE COMPASS.															
35. Bombay.[1] No. of observations.	January	660.9	202.6	368	136.9	193.7	77.2	11.3	3	9.8	0	19.8	39.5	117.2	137.2	895.1	583.9
	February	558.4	180.6	289	84.8	168	64.3	56	18	7	12	12	23	119.5	175.3	934.2	459
	March	330.5	151.2	159.5	48.8	47.3	62.8	35.5	14.2	10.3	8	42	47.7	204.8	383.2	1399.4	446.9
	April	194.3	129.7	76	15	68.7	34	45.3	19	69.2	73	90.2	161.7	276.1	543.5	1122.2	373.3
	May	45.3	26	3	1	10	11	23.5	12	96.7	148.7	329.3	479.7	791.3	577.5	666.7	112
	June	4.2	13.3	34	25.2	27.8	67	159.2	87.5	243.4	208.7	627.2	898.8	504	246.3	174.7	29.2
	July	5	4	5	7	20	17	66	54	72	106	516	1534	947	161	40	8
	August	19	10	14	22	14	34	53	27	39	40	300	1282.5	1218.5	294	141	29
	September	54	37	46	32	76	110	130	86	85	96	229	591	932	533	261	70
	October	355	220	496	214	183	106	100	69	69	29	37	104	194	298	592	440
	November	401	227	824.5	323	254	111.5	18	25	13	8	2	5	66.5	205.5	501	412
	December	505.5	261	668.5	326.5	253.5	69	26	10	7	3	12	30	79	187.5	568.5	462
	Spring	570	306.9	238.5	64.8	126	107.8	104.3	45.2	176.2	230.7	461.5	689.1	1272.2	1504.2	3188.3	932.2
	Summer	28.2	27.3	53	54.2	61.8	118	278.2	168.5	354.4	354.7	1443.2	3715.3	2669.5	701.3	355.7	66.2
	Autumn	810	484	1366.5	569	513	327.5	248	180	167	133	268	700	1192.5	1036.5	1354	922
	Winter	1724.8	644.2	1325.5	548.2	615.2	210.5	93.3	31	23.8	15	43.8	92.5	315.7	500	2397.8	1504.9
	The year	3133	1462.4	2983.5	1236.2	1316	763.8	723.8	424.7	721.4	733.4	2216.5	5196.9	5449.9	3742	7295.8	3425.3
Sums of Velocities.	January	5708	1285.9	2636.4	974.9	1243.9	572.9	46.3	12.8	73	0	167.5	335.6	1432.5	1426.6	12620.9	7946
	February	4739.8	1318.9	2302	660.5	1108	476.1	387	172.2	62.8	99	48.4	235	1523.8	2027.8	13651.3	6031.1
	March	2538.7	1057.5	1092	356.2	234.9	498.3	248.5	86.6	73	62	281.4	492.6	2010.6	5336	15319.8	5408.6
	April	1276.1	588.5	426.8	71	471.9	239	378.1	182	934.3	650	678	1493	3059.6	6906.9	16221.8	4496.1
	May	262.7	146	31	11	52.4	100	187.7	138	1363.7	1511.7	3092.9	4655.1	7807.8	6897.9	7156.2	1243.4
	June	29.3	111.5	329	199	268	800	3986.6	2425.2	6049.2	3905.5	11483.3	17307.8	7858.9	3562	2229.7	314
	July	27	33.2	36	59.4	199.5	177	1204.8	889	1399.9	2048.2	10161.8	32914.9	19094.6	2455.4	475.2	63
	August	117	56	107.5	168	93	404	749.1	366	593.2	578.4	5118.2	20194.8	22887.9	3953.8	1825.8	231
	September	351.6	212.9	289.7	248.2	590.7	1156.8	1648.5	1111	1000.2	1374	2970.7	8014.6	12289.9	5787.4	2855.8	653.7
	October	2529.6	1413	3900.7	1640.8	1182.1	989.6	1294.1	879	574.8	348.1	296	830.4	2313.9	3026.4	7409.3	4731
	November	3444.8	1633.9	8423.2	3049.3	2145.9	948.5	218	418	145	93.4	16.3	30.9	519.4	2068.1	6380.2	4809.8
	December	3972.3	1563	6160.7	2854.1	1967	570.5	196	71	38	19	79.2	226	667.2	1662	7009.6	6466.9
	Spring	4077.5	1792	1549.8	438.2	759.2	837.3	814.3	406.6	2371	2223.7	4052.3	6640.7	12878	19140.8	38697.8	11148.1
	Summer	173.3	200.7	472.5	426.4	560.5	1381	5940.5	3680.2	8042.3	6532.1	26763.3	70417.5	49841.4	9971.2	4530.7	608
	Autumn	6326	3259.8	12613.6	4938.3	3918.7	3094.9	3160.6	2408	1720	1815.5	3283	8875.9	15123.2	10881.9	16645.3	10194.5
	Winter	14420.1	4167.8	11099.1	4489.5	4318.9	1619.5	629.3	256	173.8	118	295.1	796.6	3626.5	5116.4	33281.8	20444
	The year	24996.9	9420.3	25735	10292.4	9557.3	6932.7	10544.7	6750.8	12307.1	10689.3	34393.7	86630.7	81469.1	45110.3	93155.6	42394.6
Velocity, miles per hour.	January	8.6	6.2	7.1	7.1	6 4	7.4	4.2	4.3	7.3	0	8.3	8.3	12.2	10.4	14.1	13.6
	February	8.4	7.2	7.9	7.7	6.5	7.4	6.9	9.5	9.0	8.3	4.0	10.2	12.8	11.5	14.6	13.1
	March	7.6	7.0	6.9	7.2	5.0	8.0	6.6	6.2	7.3	6.8	6.6	10.2	9.8	13.9	10.9	12.1
	April	6.5	4.5	5.6	4.7	6.8	7.0	8.4	9.5	13.5	8.9	7.4	9.2	11.0	12.7	14.4	12.0
	May	5.8	5.6	10.3	11.0	5.2	9.0	7.8	16.5	14.0	10.1	9.4	9.6	9.9	11.9	10.7	11.0
	June	7.2	8.6	9.6	7.9	9.5	11.9	25.1	27.5	24.8	18.6	18.1	19.2	15.5	14.4	12.7	10.8
	July	5.4	8.2	7.2	8.4	10.0	10.4	18.3	16.4	19.4	19.3	19.6	21.4	20.1	15.2	11.8	7.8
	August	6.1	5.6	7.7	7.6	6.6	11.8	14.1	13.5	15.4	14.4	17.0	15.7	18.7	13.4	12.9	7.9
	September	6.5	5.7	6.3	7.7	7.7	10.5	12.7	12.9	11.7	14.3	12.9	13.5	13.1	10.8	10.9	9.4
	October	7.1	6.3	7.8	7.6	6.4	9.3	12.9	12.8	8.3	12.0	8.0	7.9	11.8	10.1	12.5	10.7
	November	8.5	7.1	10.2	9.4	8.2	8.4	12.1	16.7	11.3	9.3	8.1	6.1	8.1	10.0	12.7	11.6
	December	7.8	5.9	9.2	8.7	7.7	8.2	7.5	7.1	5.4	6.3	6.6	4.5	8.4	8.8	12.3	13.9
	Spring	6.6	5.7	7.6	7.6	5.7	8.0	7.6	10.7	11.6	8.6	7.8	9.6	10.2	12.8	11.7	11.7
	Summer	6.2	7.5	8.2	8.0	9.7	13.3	19.2	19.1	19.8	14.1	18.2	18.7	18.1	14.3	12.4	8.9
	Autumn	7.3	6.4	8.1	8.2	7.5	9.4	12.6	10.8	10.4	11.9	9.6	9.1	11.0	10.3	12.0	10.5
	Winter	8.3	6.4	8.1	7.8	6.9	6.7	6.2	7.0	7.2	4.9	7.8	7.7	11.1	10.2	13.7	13.5
	The year	7.1	6.5	8.0	7.9	7.2	9.4	11.5	11.9	11.7	9.8	10.8	11.3	12.6	11.9	12.5	11.2
35(*a*). Bombay.[2]																	

		Direction of resultant.	Ratio of result'nt to sum of winds.	Monsoon influenecs. Direction.	Monsoon influenecs. Force.
[1] 35. Bombay. No. of observations.	Spring	N. 58° 30′ W.	.62	N. 66° W.	.17
	Summer	S. 69 42 W.	.78	S. 44 W.	.62
	Autumn	N. 25 7 W.	.37	N. 70 E.	.22
	Winter	N. 5 15 W.	.64	N. 40 E.	.49
	The year	N. 45 23 W.	.42		

[2] Dr. Buchan, in his treatise on the winds, gives the following directions of the resultants for the different months at this place, viz.: January N. 10° W., February N. 24° W., March N. 44° W., April N. 61° W., May N. 80° W., June S. 63° W., July S. 65° W., August S. 75° W., September N. 89° W., October N. 19° W., November N. 3° E., December N. 14° W.

(No. 36.) **India.**—*Continued.*

		Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
36. Duklum.	January	20	26	105	13	13	2	46	8	219	N. 75° 36′ E.	.18
	February	20	17	63	12	1	3	73	14	221	N. 4 15 W.	.05
	March	9	5	79	1	2	3	156	14	178	N. 78 16 W.	.19
	April	7	10	29	0	3	6	240	12	129	N. 85 57 W.	.50
	May	5	12	12	8	5	52	242	35	77	S. 88 6 W.	.62
	June	1	1	1	5	2	87	241	1	81	S. 77 46 W.	.72½
	July	0	0	0	0	0	101	279	0	52	S. 78 29 W.	.83
	August	0	0	0	0	0	19	314	0	126	S. 87 39 W.	.71
	September	0	0	0	0	1	26	299	0	114	S. 86 30 W.	.72
	October	23	25	63	9	1	4	69	9	259	N. 13 30 E.	.08
	November	17	28	187	9	2	1	10	7	171	N. 80 36 E.	.46
	December	13	19	164	46	6	1	13	23	142	N. 88 54 E.	.42
	Spring	21	27	120	9	10	61	638	61	384		
	Summer	1	1	1	5	2	201	834	1	259		
	Autumn	40	53	250	18	4	31	378	16	544		
	Winter	53	62	332	71	20	6	132	45	582		
	Sunrise	29	23	130	20	14	55	357	27	847		
	9 to 10 A.M.	40	57	368	40	14	113	643	33	452		
	4 P.M.	46	62	197	41	8	130	902	51	304		
	10 to 11 "	0	1	8	0	0	7	80	11	117		
	The year	115	143	705	103	36	305	1982	123	1769	S. 89 7 W.	.26

(Nos. 37 to 43.) **Bay of Bengal, China Sea, and Pacific Ocean** west of long. 180°. Computed from obervations for an aggregate period of over ten years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
37. Bay of Bengal, longitude 79° to 85° E.	Spring	1	1	0	5	4	6	5	12	14	17	41	10	8	1	1	0	5	S. 23° 3′ W.	.62	....	...	44
	Summer	0	0	1	0	1	0	2	2	7	28	45	22	10	16	3	0	0	S. 51 53 W.	.80	....	...	46
	Autumn	2	10	5	0	0	0	0	4	3	7	22	14	4	3	1	1	2	S. 61 13 W.	.44	....	...	26
	Winter	5	3	12	13	6	0	4	0	0	1	5	3	0	3	0	9	0	N. 37 49 E.	.41	....	...	21
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 37 W.	.35	....	...	137
38. Bay of Bengal, longitude 85° to 90° E.	Spring	7	22	26	9	20	5	31	33	64	143	213	108	41	16	10	2	30	S. 43 14 W.	.51	....	...	263
	Summer	7	2	6	3	9	7	16	15	47	139	343	117	48	10	19	2	8	S. 43 46 W.	.79	....	...	266
	Autumn	87	159	101	44	47	10	34	19	36	51	131	46	41	33	44	21	38	N. 1 51 W.	.16	....	...	314
	Winter	135	245	258	86	35	36	33	31	8	41	36	29	28	8	35	29	27	N. 33 44 E.	.53	....	...	367
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 26 W.	.17½	....	...	1210
39. Bay of Bengal, longitude 90° to 98° E.	Spring	16	3	5	0	1	2	6	1	6	33	79	25	33	20	39	11	30	S. 76 9 W.	.54	....	...	103
	Summer	1	0	0	0	0	0	0	0	1	14	80	17	1	4	2	0	0	S. 48 54 W.	.93	....	...	40
	Autumn	42	90	70	25	21	21	15	4	4	12	10	3	1	7	12	27	9	N. 34 17 E.	.57	....	...	124
	Winter	72	79	68	19	12	2	1	1	6	10	12	15	6	1	29	14	20	N. 13 41 E.	.56	....	...	126
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 33 W.	.20	....	...	393
40. China Sea, longitude 106° to 115° E.	Spring	9	16	68	77	156	55	75	21	57	16	6	7	0	0	3	0	4	S. 79 33 E.	.67	....	...	190
	Summer	14	6	6	13	28	5	58	68	136	109	93	28	24	5	5	2	8	S. 16 42 W.	.66	....	...	203
	Autumn	41	51	150	46	79	17	29	20	22	14	11	2	8	9	4	7	9	N. 61 55 E.	.55	....	...	173
	Winter	44	99	216	44	70	27	26	9	3	0	0	0	0	0	4	3	0	N. 51 53 E.	.81	....	...	182
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 46 E.	.44	....	...	748
41. China Sea, longitude 115° to 120° E.	Spring	39	29	103	45	47	11	19	3	31	17	12	9	11	3	11	9	10	N. 57 55 E.	.43	....	...	136
	Summer	7	0	14	4	14	6	16	14	64	88	91	26	4	1	11	2	2	S. 21 27 W.	.64	....	...	121
	Autumn	89	42	238	39	62	24	45	18	57	6	36	7	27	18	28	24	10	N. 32 46 E.	.33	....	...	257
	Winter	64	42	87	32	15	2	8	0	0	0	0	0	3	3	2	7	0	N. 33 46 E.	.81	....	...	88
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 52 33 E.	.24	....	...	602
42. Pacific Ocean, longitude 120° to 130° E.	Spring	7	16	80	32	28	11	17	2	10	10	6	1	9	3	3	5	0	N. 64 54 E.	.55	S. 32° E.	.10	80
	Summer	0	0	9	12	19	9	9	3	4	3	8	4	1	2	4	0	4	S. 72 47 E.	.42	S 5½ W.	.44½	30
	Autumn	13	4	25	7	1	0	2	0	0	0	0	0	3	3	11	0	1	N. 18 5 E.	.67	N. 37 W.	.40	23
	Winter	9	34	149	68	24	2	1	4	3	2	2	0	0	0	0	0	1	N. 52 17 E.	.88	N. 49 E.	.33	100
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 54 27 E.	.55	....	...	233
43. Pacific Ocean, longitude 130° to 150° E.	Spring	9	12	116	108	108	2	21	5	19	0	10	0	4	2	0	3	16	N. 73 38 E.	.73	....	...	152
	Summer	1	0	28	2	30	2	9	3	8	4	4	3	2	1	2	0	1	S. 87 27 E.	.50	....	...	33
	Autumn	16	18	70	44	83	12	9	2	3	0	20	1	6	0	3	7	0	N. 65 50 E.	.64	....	...	98
	Winter	8	35	105	78	30	9	23	3	3	0	2	3	0	6	7	5	3	N. 57 16 E.	.74	....	...	107
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 35 E.	.64	....	...	390

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 15.

Observations on the Indian Ocean, calculated by the Meteorological Institute of the Netherlands, under Captain Cornelissen's direction. Given in percentage of the entire number of observations.

		Relative Prevalence of Winds from the Different Points of the Compass.								
		North.	N E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S. W. or betw'n S. & W.	West.	N. W. or betw'n N. & W.	Calm or variable.
38(*a*). Between 80°–90° E.	Spring	...	11	...	19	...	56	...	10	4
	Summer	...	2	...	8	...	81	...	8	1
	Autumn	...	39	...	14	...	29	...	14	3
	Winter	...	59	...	7	...	15	...	17	3
39(*a*). Between 90°–100° E.	Spring	...	6	...	8	...	41	...	37	8
	Summer	...	1	...	5	...	87	...	6	2
	Autumn	...	39	...	14	...	25	...	18	4
	Winter	...	55	...	3	...	8	...	4	4

ZONE No. 16.

Latitude 10° to 15° North.

The data for the study of the winds of this zone consist of observations made at over 22 stations on land, for an aggregate period of 46 years 1 month; and at sea for 26 years 5 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	3254 days = 8 years 10 months.
America,	5	3 years 3 months.
West Indies,	2	7 years 2 months.
Atlantic Ocean,	....	nearly 7 years.
Cape Verde Islands,	1	1 year 5 months.
Africa,	7	7 years 4 months.
Red and Arabian Seas,	....	over 2 years.
Asia,	5	20 years 5 months.
Bay of Bengal,	....	nearly 4 years 6 months
China Sea,	....	over 4 years.
Gulf of Siam,	....	34 days.
Islands of the Pacific,	2	6 years 6 months.

(Nos. 1 to 5.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of 2706 days, collected and classified, from the logs of the different sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

(Nos. 1 to 5.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
1. Longitude 145° to 165° W.	Spring	9	61	396	130	57	18	16	0	2	0	0	0	0	0	0	0	0	N. 53° 36′ E.	.92	N. 1° W.	.14	230
	Summer	0	0	66	48	19	2	11	1	1	0	0	0	0	1	0	0	4	N. 65 14 E.	.86	S. 35 E.	.07	51
	Autumn	47	32	574	422	319	67	43	30	20	7	17	0	10	0	28	2	19	N. 65 22 E.	.80	S. 10 W.	.08	546
	Winter	17	24	170	158	117	4	8	3	0	0	0	0	2	0	3	0	4	N. 62 0 E.	.88	S. 44 W.	.05	170
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 21 E.	.85	....	...	997
2. Longitude 125° to 145° W.	Spring	16	143	665	103	43	15	32	6	0	0	4	0	0	0	5	0	1	N. 48 5 E.	.90	N. 48 E.	.16	345
	Summer	1	33	29	2	19	0	0	3	0	0	3	0	0	0	0	0	0	N. 47 55 E.	.79	N. 42¼ E.	.04	30
	Autumn	24	32	113	24	35	12	3	9	7	7	35	4	14	1	1	7	14	N. 50 41 E.	.44	S. 44 W.	.30	114
	Winter	12	23	287	60	25	0	13	2	0	0	0	0	3	1	6	4	3	N. 48 11 E.	.87	N. 48 E.	.13	146
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 48 3 E.	.74	....	...	634
3. Longitude 115° to 125° W.	Spring	20	57	112	21	0	0	3	0	0	0	2	3	0	0	0	3	6	N. 37 19 E.	.86	N. 35 E.	.37	76
	Summer	29	16	30	10	2	0	7	3	16	11	12	0	21	12	9	1	12	N. 8 36 W.	.21	S. 63 W.	.37	64
	Autumn	14	7	20	18	8	0	4	3	6	5	6	0	3	6	18	5	0	N. 21 35 E.	.35	S. 73 W.	19	41
	Winter	3	21	58	41	33	4	12	2	2	4	6	0	4	0	3	1	6	N. 63 25 E.	.67	S. 74½ E.	.30	67
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 38 41 E.	.49	....	...	248
4. Longitude 105° to 115° W.	Spring	18	24	45	3	16	3	0	2	2	0	1	0	10	6	8	8	15	N. 24 51 E.	.57	N. 10 E.	.24	54
	Summer	18	11	8	2	7	2	5	7	6	7	32	8	24	7	18	21	9	N. 70 19 W.	.31	S. 71¼ W.	.52	64
	Autumn	21	11	44	28	16	11	9	3	4	4	18	16	12	16	9	0	14	N. 35 39 E.	.24	S. 10 W.	.10	79
	Winter	16	16	99	66	39	6	5	7	4	0	2	0	0	1	0	0	5	N. 60 48 E.	.84	N. 76¼ E.	.55	89
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 35 44 E.	.34	....	...	286
5. Longitude 85° to 105° W.	Spring	18	13	66	13	29	5	8	4	12	3	2	0	11	1	59	15	22	N. 21 7 E.	.42	N. 18¼ W.	.25	74
	Summer	2	2	3	5	18	5	18	2	3	3	7	0	4	0	0	3	0	S. 62 55 E.	.48	S. 28 E.	.42	25
	Autumn	22	21	54	28	37	19	43	14	14	11	20	17	42	5	37	26	46	N. 44 7 E.	.14	S. 67 W.	.15	152
	Winter	82	36	239	67	98	16	30	4	9	1	27	6	47	18	70	42	77	N. 33 24 E.	.46	N. 5 E.	.23	290
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 56 10 E.	.28	......	...	541

[1] Computed from the resultants for the seasons.

(No. 6.) **City of Guatemala.**

Observed by Antonia Canudas, during the year 1859.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
Spring	7	123	1	4	0	134	0	12	86	N. 68° 36′ W.	.03½	S. 43° W.	.46
Summer	28	187	4	4	3	61	1	21	57	N. 32 13 E.	.41	N. 84 W.	.06
Autumn	15	248	10	4	0	41	2	4	37	N. 43 32 E.	.62	N. 55 E.	.18
Winter	6	248	3	3	4	0	26	3	15	N. 40 42 E.	.76	N. 43½ E.	.32
The year[1]	...	...	...	...	...	...	...	...	...	N. 38 45 E.	.44		

[1] Computed from the resultants for the seasons.

(Nos. 7 to 12.) **New Granada and Venezuela** (northern parts of each).

Observed at the following places, viz. :—

Cartagena, New Granada, by Captain John Parsons, on board the ship Scorpion, from April 23 to June 11, 1854 inclusive, and published in No. 1 of the Meteorological Papers of the London Board of Trade.

Caraccas, Venezuela, by A. Avellado, during the year 1868.

Colonia Tovar, Venezuela, by Augustus Fendler, in the months of June, August, September and October, 1856. It seems probable that the record embraces only the exceptional surface winds, the predominant ones from easterly and northerly points being generally omitted. The record of the motion of the clouds is more complete.

Porto Cabello, Venezuela, by Mr. Litchfield, from June, 1843, to February, 1844, inclusive.

(Nos. 7 to 12.) **New Granada and Venezuela.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	Last.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
7. Cartagena.	Spring	18	5	20	3	6	3	11	2	10	1	9	3	9	5	15	15	21	N. 10° 22′ W.	.21	....	...	39
	Summer	3	7	2	0	3	0	2	2	4	2	1	0	0	4	0	3	11	N. 43 32 E.	.17	....	...	11
8. Porto Cabello.	Summer	98	0	292	2	366	0	124	9	121	2	162	0	55	1	48	0	2	N. 88 49 E.	.36	....	...	92
	Autumn	90	0	304	1	243	0	164	5	130	3	190	0	51	1	34	0	10	S. 81 22 E.	.30	....	...	91
	Winter	30	2	604	10	268	0	114	0	41	1	78	0	36	0	38	0	10	N. 64 20 E.	.60	....	...	91
9. Colonia Tovar (motion of clouds.)	Summer	5	...	14	...	33	...	80	...	10	...	1	...	0	...	0	...	...	S. 47 13 E.	.94	....	...	92
	Autumn	15	...	6	...	28	...	50	...	28	...	4	...	7	...	7	...	...	S. 51 21 E.	.47	....	...	91
10. Caraccas (surface winds.)	Spring	0	1	4	0	40	7	36	0	0	0	19	1	45	1	1	0	...	S. 16 42 E.	.26½	S. 56½° W.	.33	92
	Summer	0	0	2	0	150	24	140	0	0	0	0	0	16	0	2	0	...	S. 65 40 E.	.82	....	...	154
	Autumn	0	0	1	1	39	31	53	0	0	0	0	0	30	0	0	0	...	S. 50 12 E.	.58½	....	...	91
	Winter	0	1	4	0	40	19	54	3	1	0	6	1	26	0	1	0	...	S. 49 44 E.	.55½	....	...	91
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 40 E.	.54½	....	...	428
11. Caraccas (motion of clouds.)	Summer	1	...	0	...	40	...	46	...	8	...	0	...	1	...	2	...	...	S. 61 29 E.	.81	....	...	62
12. Northern Venezuela.[1] Surface winds.	Summer	98	0	294	2	516	24	264	9	121	2	162	0	71	1	50	0	2	S. 81 43 E.	.44½	S. 86 E.	.13	246
	Autumn	90	0	305	2	282	31	217	5	130	3	190	0	81	1	34	0	10	S. 64 13 E.	.19	S. 79 W.	.14	182
	Winter	30	3	608	10	308	19	168	3	42	1	84	1	62	0	39	0	10	N. 70 25 E.	.56	N. 42 E.	.33	182
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 30 E.	.31	....	...	702
Motion of clouds.	Summer	6	...	14	...	73	...	126	...	18	...	1	...	1	...	2	...	...	S. 61 37 E.	.79½	....	...	92
Aggregate of the two.	Summer	104	0	308	2	589	24	390	9	139	2	163	0	72	1	52	0	2	S. 77 35 E.	.48¼	S. 75 E.	.13	338
	Autumn	105	0	311	2	310	31	267	5	158	3	194	0	88	1	41	0	10	S. 72 20 E.	.33½	S. 38 W.	.05	273
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 79 14 E.	.37			

[1] Porto Cabello, Caraccas and Colonia Tovar combined. [2] Computed from the resultants for the seasons.

(Nos. 13 to 15.) **West Indies.**

Observed at the following places, viz.:—

Barbadoes, by Mr. Dawson, from May, 1841, to January, 1842, inclusive; also another series for a period of six years, 1853 to 1859.

Port of Spain, Trinidad, by Geological Surveyors, for October, 1856, to February, 1857, inclusive.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
13. Port of Spain. Motion of clouds.	October, November	5	...	32	...	68	...	44	...	6	...	5	...	6	...	15	...	...	S. 88° 37′ E.	.56		
	Winter	2	...	66	...	117	...	51	...	3	...	5	...	0	...	2	...	...	N. 87 48 E.	.79		
Surface winds.	January, February	3	...	37	...	52	...	36	...	0	...	3	...	11	...	3	...	...	N. 87 36 E.	.61		
14. Barbadoes, 1841–2. Surface winds.	May	0	0	0	1	16	16	9	5	0	0	0	0	0	0	0	0	...	S. 74 6 E.	.93		
	Summer	1	3	7	76	98	46	13	6	0	0	0	0	0	0	0	0	...	S. 87 50 E.	.94½		
	Autumn	1	3	9	119	30	29	34	4	1	0	2	0	0	0	0	0	...	S. 72 5 E.	.80½		
	Winter	0	1	15	118	15	3	2	0	0	0	0	0	0	0	0	0	...	N. 71 10 E.	.89		
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 50 E.	.86½		
M'tion of clouds.	September, October	18	4	9	16	15	8	26	31	11	6	89	6	0	1	5	16	...	S. 22 18 W.	.40		
15. Barbadoes, 1853–9.	Spring	0	...	12	...	56	...	23	...	0	...	0	...	0	.	1	...	...	S. 84 57 E.	.87½	S. 1½ E.	.10
	Summer	0	...	20	...	55	...	16	...	0	...	1	...	0	...	0	...	...	N. 88 29 E.	.87	S. ½ E	.01
	Autumn	1	...	15	...	52	..	21	...	2	...	0	...	0	...	0	...	...	S. 86 8 E.	.85	S. 11½ W.	.08
	Winter	1	...	32	...	50	...	7	...	0	...	0	...	0	...	0	...	...	N. 76 28 E.	.89	N. 1 W.	.18
	The year	2	...	79	...	43	..	67	..	2	...	1	...	0	...	1	...	...	N. 88 27 E.	.86		

[1] Computed from the resultants for the seasons.

(Nos. 16 to 24.) **Atlantic Ocean.**

Computed from observations for an aggregate period of nearly seven years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
16. Longitude 50° to 75° W.	Spring	2	6	172	87	61	26	18	3	4	0	2	2	3	2	5	3	3	N. 64° 36′ E.	.80	S. 43° W.	.01	133
	Summer	0	2	45	10	11	6	1	0	0	0	0	0	0	0	0	0	0	N. 59 46 E.	.91	N. $25\frac{1}{2}$ E.	.13	25
	Autumn	5	3	33	24	31	7	7	7	3	0	0	0	2	0	3	0	6	N. 73 54 E.	.69	S. $25\frac{1}{2}$ W.	.16	44
	Winter	6	20	70	42	32	17	6	0	2	0	0	0	0	0	2	0	1	N. 61 45 E.	.84	N. $10\frac{1}{2}$ E.	.05	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 27 E.	.81	....	...	268
17. Longitude 45° to 50° W.	Spring	7	16	273	111	62	12	11	0	0	1	0	0	0	0	0	1	3	N. 57 17 E.	.91	N. $73\frac{3}{4}$ E.	.$07\frac{1}{2}$	166
	Summer	3	2	167	47	15	6	8	2	0	0	1	0	0	0	0	0	2	N. 55 17 E.	.90	N. $43\frac{1}{4}$ E.	.06	85
	Autumn	1	10	75	31	6	12	8	8	5	0	4	0	0	0	1	1	5	N. 64 28 E.	.71	S. $17\frac{3}{4}$ W.	.18	56
	Winter	6	26	159	25	19	7	4	1	0	0	0	0	3	2	3	4	0	N. 49 9 E.	.86	N. $29\frac{1}{4}$ W.	.13	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 55 51 E.	.84	....	...	393
18. Longitude 45° to 75° W.	January	0	23	57	16	14	8	3	1	0	0	0	0	0	0	0	0	1	N. 55 0 E.	.87	N. $8\frac{1}{2}$ W.	.11	41
	February	3	18	127	35	15	11	1	0	1	0	0	0	1	0	1	2	0	N. 52 12 E.	.90	N. $2\frac{1}{4}$ E.	.14	72
	March	6	14	167	69	40	23	5	0	1	0	0	1	0	0	3	2	3	N. 58 14 E.	.87	N. $32\frac{1}{2}$ E.	.06	111
	April	3	7	153	63	41	8	14	0	3	1	1	1	2	2	1	2	3	N. 59 59 E.	.83	N. $73\frac{1}{2}$ E.	.01	102
	May	0	2	125	66	47	7	10	3	0	0	1	0	1	0	1	0	0	N. 63 8 E.	.89	S. $83\frac{1}{2}$ E.	.08	88
	June	2	1	106	30	9	0	1	0	0	0	0	0	0	0	0	0	0	N. 51 50 E.	.96	N. $14\frac{1}{2}$ E.	.17	50
	July	1	0	68	13	9	4	4	0	0	0	1	0	0	0	0	0	1	N. 46 49 E.	.89	N. $15\frac{1}{4}$ W.	.20	34
	August	0	3	39	14	8	8	4	2	0	0	0	0	0	0	0	0	1	N. 65 14 E.	.85	S. $48\frac{3}{4}$ E.	.08	26
	September	2	4	20	7	18	3	7	9	4	0	0	0	2	0	3	0	7	N. 82 29 E.	.55	S. 25 W.	.38	29
	October	4	4	26	27	14	6	8	4	4	0	4	0	0	0	1	0	2	N. 73 52 E.	.67	S. $15\frac{1}{4}$ W.	.21	35
	November	0	5	62	21	5	10	0	2	0	0	0	0	0	0	0	0	2	N. 57 37 E.	.89	N. $29\frac{1}{4}$ E.	.08	36
	December	9	5	45	16	22	5	5	0	1	0	0	0	2	2	4	2	0	N. 54 38 E.	.74	N. $80\frac{3}{4}$ W.	.11	39
	The year	30	86	995	377	242	93	63	21	14	1	7	2	8	4	14	8	20	N. 59 55 E.	.82	....	...	663
19. Longitude 40° to 45° W.	Spring	1	30	202	50	29	9	3	0	0	0	0	0	0	0	0	0	0	N. 52 21 E.	.94	N. 35 E.	.18	108
	Summer	10	9	128	62	28	8	13	3	13	3	16	5	7	2	9	7	12	N. 58 0 E.	.57	S. $51\frac{1}{4}$ W.	.20	112
	Autumn	13	7	116	37	48	12	16	5	3	3	2	1	8	3	2	2	3	N. 62 15 E.	.70	S. $12\frac{1}{4}$ W.	.11	94
	Winter	4	6	89	18	20	0	7	0	0	1	0	0	0	0	0	0	1	N. 55 22 E.	.88	N. $44\frac{3}{4}$ E.	.11	49
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 56 31 E.	.77	....	...	363
20. Longitude 35° to 40° W.	Spring	0	2	44	15	20	2	1	0	0	0	0	0	0	0	0	0	0	N. 62 23 E.	.92	N. 49 E.	.23	28
	Summer	9	12	79	27	33	8	5	3	2	3	7	4	10	2	4	1	13	N. 56 24 E.	.57	N. 80 W.	.18	74
	Autumn	3	23	58	30	53	10	19	11	7	4	13	13	9	4	7	3	15	N. 74 21 E.	.39	S. 56 W.	.33	94
	Winter	2	8	21	11	8	7	3	0	0	0	0	0	0	0	0	0	0	N. 67 7 E.	.81	N. 76 E.	.09	20
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 5 E.	.71	....	...	216
21. Longitude 30° to 35° W.	Spring	6	1	52	58	37	3	0	0	0	0	0	0	0	0	0	0	2	N. 63 37 E.	.91	N. 40 E.	.23	53
	Summer	7	5	56	53	61	10	13	5	5	3	9	6	7	6	2	6	15	N. 72 0 E.	.55	S. $67\frac{1}{2}$ W	.16	90
	Autumn	6	10	29	44	82	19	12	5	9	13	12	3	11	1	5	1	7	N. 87 26 E.	.53	S. 35 W.	.25	90
	Winter	2	12	26	31	38	10	1	0	0	0	0	0	0	0	0	0	1	N. 68 13 E.	.87	N. 56 E.	.16	40
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 71 0 E.	.71	....	...	273
22. Longitude 25° to 30° W.	Spring	12	12	46	58	51	4	0	0	0	0	0	0	0	0	0	0	1	N. 62 19 E.	.89	N. 41 E.	.22	28
	Summer	36	34	115	110	69	19	12	5	25	17	34	11	9	4	13	12	49	N. 61 21 E.	.45	S. $82\frac{1}{2}$ W.	.25	191
	Autumn	8	33	61	73	73	33	10	9	11	7	17	6	4	2	1	3	14	N. 75 32 E.	.63	S. $18\frac{1}{2}$ W.	.10	115
	Winter	4	8	58	58	68	22	9	3	1	1	0	0	0	0	1	0	3	N. 73 49 E.	.85	S. $82\frac{1}{4}$ E.	.17	79
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 68 33 E.	.69	....	...	413
23. Longitude 15° to 25° W.	Spring	11	66	57	37	5	4	0	1	0	0	0	2	0	7	1	6	0	N. 36 31 E.	.84	N. $39\frac{1}{4}$ E.	.28	66
	Summer	31	126	52	48	14	26	4	33	15	77	31	39	5	34	17	68	64	N. 10 19 E.	.18	S. 46 W.	.40	228
	Autumn	24	130	55	75	25	17	6	20	10	20	7	19	3	18	3	25	47	N. 40 53 E.	.44	S. $16\frac{1}{2}$ W.	.13	504
	Winter	7	105	58	41	6	14	0	1	0	0	0	0	0	14	0	4	7	N. 37 10 E.	.77	N. $42\frac{1}{4}$ E.	.22	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 35 36 E.	.56	....	...	884
24. Longitude 15° to 45° W.	January	5	41	72	58	32	14	2	0	0	0	0	0	0	4	0	1	2	N. 55 30 E.	.85	N. $50\frac{1}{4}$ E.	.20	77
	February	5	47	88	48	47	15	3	1	0	0		0	0	9	1	3	3	N. 54 41 E.	.81	N. 45 E.	.15	90
	March	9	36	122	79	45	11	1	1	0	0	0	1	0	1	0	2	0	N. 55 51 E.	.89	N. $52\frac{3}{4}$ E.	.24	103
	April	5	38	137	79	60	10	2	0	0	0	0	1	0	4	0	1	2	N. 56 44 E.	.88	N. $56\frac{1}{4}$ E.	.23	113
	May	16	37	142	60	37	1	1	0	0	0	0	0	0	2	1	3	0	N. 49 14 E.	.90	N. $29\frac{1}{2}$ E.	.26	100
	June	21	48	126	138	62	20	4	3	7	2	1	3	1	10	8	14	13	N. 55 0 E.	.75	N. $41\frac{1}{2}$ E.	.09	160
	July	17	64	155	91	88	25	17	13	9	30	33	19	12	17	13	24	62	N. 57 2 E.	.42	S. $58\frac{1}{2}$ W.	.24	228
	August	55	74	149	71	60	26	26	33	44	71	63	43	25	21	24	56	78	N. 49 18 E.	.17	S. 46 W.	.49	306
	September	31	67	97	52	43	26	15	14	26	30	39	29	23	21	13	24	44	N. 46 6 E.	.23	S. $62\frac{3}{4}$ W.	.42	198
	October	16	68	103	72	87	36	27	30	7	13	9	9	9	7	4	9	27	N. 69 20 E.	.55	S. 13 W.	.17	178
	November	7	69	119	135	151	29	21	6	7	3	3	4	3	0	1	1	15	N. 68 54 E.	.78	S. $66\frac{1}{2}$ E.	.19	191
	December	9	51	92	53	61	24	15	3	1	2	0	0	0	1	1	0	4	N. 61 33 E.	.78	N. 84 E.	.13	106
	The year	196	640	1402	936	768	237	134	104	101	151	148	109	73	97	66	138	251	N. 57 25 E.	.66	....	...	1850

[1] Computed from the resultants for the seasons.

(No. 24(*a*).) **Cape Verde Islands.** 1865 and 1866, 17 months.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable			Direction.	Force.
24(*a*). Port Praya.	January	23	8	0	0	0	0	0	0					
	February	16	7	1	3	0	0	0	1					
	March	16	11	1	0	0	0	0	2					
	April	26	4	0	0	0	0	0	0					
	May	19	11	0	0	0	0	0	1					
	June	13	12	1	2	0	0	0	2					
	July	10	15	3	3	0	0	0	0					
	August	10	9	1	8	0	1	1	1					
	September	10	11	3	5	0	0	0	1					
	October	11	18	2	0	0	0	0	0					
	November	14	12	1	1	1	0	0	1					
	December	15	16	0	0	0	0	0	0					
	Spring	61	26	1	0	0	0	0	3	...	N. 11° 55′ E.	.91½	N. 39° W.	.21
	Summer	33	36	5	13	0	1	1	3	...	N. 37 23 E.	.68½	S. 26 E.	.22
	Autumn	35	41	6	6	1	0	0	2	...	N. 31 48 E.	.78	S. 54½ E.	.13
	Winter	54	21	1	3	0	0	0	1	...	N. 15 39 E.	.88	N. 33 W.	.13
	The year	183	124	13	22	1	1	1	9	...	N. 22 36 E.	.82		

(No. 24(*b*).) **Soudan.** By Gerhard Rohlfs.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
24(*b*). Kouka.	July, August	2	3	1	3	10	49	20	0	110	S. 50° 23′ W.	.34
	Autumn	26	24	45	24	5	7	4	5	160	N. 73 34 E.	.23
	December	12	26	3	0	0	0	0	11	43	N. 19 36 E.	.45

(No. 25.) **District of Senaar, Southern Nubia.**

Observed by Frederic Cailliand, from June 5, to December 21, 1821, and from February 19 to 28, 1822. All the observations were made at the city of Senaar, except during the first seven days, when they were made within a distance of 60 miles north of the city, and during twenty days of December and eight of February, when they were made at different points extending as far south as the southern limits of the district.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
February	18	0	0	0	1	0	0	1	2	....	...	28
June	0	0	1	1	22	19	2	1	6	....	...	26
July	0	0	2	2	39	1	5	1	12	....	...	31
August	0	0	0	3	42	1	3	1	12	....	...	31
September	0	0	1	0	43	1	1	0	14	....	...	30
October	5	0	1	0	34	2	0	3	17	....	...	31
November	57	0	0	0	0	0	0	0	3	North.	.95	30
December	55	0	0	0	0	0	0	0	7	North.	.89	31
Summer	0	0	3	6	103	21	10	3	30	S. 9° 21′ W.	.66½	
Autumn	62	0	2	0	77	3	1	3	34	S. 12 11 W.	.08	
Winter	132	0	1	0	6	0	0	4	37	N. 0 48 W.	.72	

(Nos. 26 to 29.) **Abyssinia and Southern Arabia.**

Observed at the following places, viz. :—

Abgoulaui, Kilgou, Sinque and the intervening regions in western Abyssinia, by Frederic Cailliand, from December 22, 1821, to February 18, 1822.

Aden, Arabia, from June to December inclusive in the year 1846.

Adouah and vicinity, Abyssinia, by Lefebore, in July, 1839, June to September inclusive, 1841, and June to October inclusive, 1842, making in the aggregate a period of 217 days; also by Rev. H. Hunter, for an aggregate period of 24 days in the years 1777 and 1778.

Antalo, Atsala and sundry other places in Eastern Abyssinia, between latitudes 10° and 14° north, by Hunter, in 1777 and 1778, and by Lefebore, 1839 to 1842 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N.E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
26. Western Abyssinia.	Winter	71	0	1	0	6	0	0	4	30	N. 1° 25′ W.?	.63	59
27. Adouah and vicinity.	Spring	0	1	0	1	0	0	1	0	2	Due East. ???	08	5
	Summer	43	29	13	118	88	136	45	354	4	N. 80 9 W.	.33½	176
	Autumn	41	11	8	28	27	30	14	98	6	N. 54 1 W.?	.32	91
28. Eastern Abyssinia. Lat. 10 to 14 N.	Spring	1	1	2	1	0	4	2	4	8	N. 76 44 W.??	.19	23
	Summer	1	1	0	0	0	0	0	1	2	North.???	.48	5
	Autumn	1	0	2	0	0	0	1	0	0	N. 45 0 E.???	.35	4
	Winter	0	2	3	4	0	0	2	0	3	S. 74 56 E.??	.39	14
	The year[1]	...	...	...	...	...	...	...	...	...	N. 33 6 E.??	.20	46
29. Aden.	June	1	0	2	1	2	16	7	1	...	....	...	30
	July	0	1	0	0	3	14	12	1	...	....	...	31
	August	1	0	0	0	3	23	3	1	...	....	...	31
	September	1	0	2	0	1	20	6	0	...	....	...	30
	October	1	12	11	2	0	4	1	0	...	....	...	31
	November	1	11	15	2	1	0	0	0	...	....	...	30
	December	0	1	26	3	0	0	0	0	...	S. 87 12 E.	.91	31
	Summer	2	1	2	1	8	53	22	3	...	S. 54 28 W.	.78	92
	Autumn	3	23	28	4	3	24	7	0	...	S. 85 37 E.	.25¼	91

[1] Computed from the resultants for the seasons.

(Nos. 30 to 32.) **Red Sea and Arabian Sea,** Longitude 40° to 75° East.

Computed from observations for an aggregate period of over two years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
30. Red Sea and Gulf of Aden, long. 40° to 50° E.	Spring	2	2	16	36	28	19	10	25	6	9	9	7	6	4	13	0	0	S. 75° 10′ E.	.40	64
	Summer	6	2	10	1	2	4	4	1	17	12	55	21	11	6	16	9	3	S. 60 39 W.	.49	60
	Autumn	5	1	15	38	17	6	12	7	4	4	11	4	9	4	2	0	14	S. 0 20 E.	.34	51
	Winter	0	0	6	52	59	10	4	0	3	0	0	0	0	0	0	0	0	N. 83 18 E.	.93	45
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 79 8 E.	.31	220
31. Longitude 50° to 60° E.	Spring	3	21	48	34	34	29	28	8	10	16	17	7	9	3	9	1	7	East.	.40	95
	Summer	3	2	3	2	2	3	7	11	13	42	85	5	3	0	0	1	7	S. 28 22 W.	.73	63
	Autumn	5	13	62	47	12	15	13	5	7	8	42	1	6	11	12	5	9	N. 65 0 E.	.28	91
	Winter	2	11	36	47	29	20	16	3	7	0	0	0	0	0	0	0	9	N. 80 4 E.	.78	67
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 69 16 E.	.29	316
32. Longitude 60° to 75° E.	Spring	36	15	15	3	0	1	0	3	3	3	16	35	26	36	39	22	7	N. 52 57 W.	.57	87
	Summer	1	1	1	3	- 1	0	1	0	0	5	63	79	45	32	33	7	0	S. 80 55 W.	.80	91
	Autumn	28	17	48	9	11	0	1	0	0	0	4	7	17	15	55	25	0	N. 11 25 W.	.61	79
	Winter	24	38	34	6	3	0	5	0	1	4	4	0	6	6	10	16	9	N. 12 21 E.	.61	56
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 41 7 W.	.47	313

[1] Computed from the resultants for the seasons.

(Nos. 33 to 37.) **India.**

Observed at the following places, viz. :—

Dodabetta, during the years 1851 to 1855 inclusive.

Madras, during the years 1838 to 1843 and 1847 to 1850, both inclusive.

Passumlie, 2 years 10 months. See Bombay Transactions, vol. vi.

Seringapatam, during the year 1816, by Searmar, who classified all the winds as N. E., S. W. or variable.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
33. Seringapatam.	Spring	...	19	...	...	...	71	...	...	2	S. W.	.56	....	...	92
	Summer	...	1	...	...	...	91	...	...	0	S. W.	.98	....	...	92
	Autumn	...	43	...	...	...	47	...	...	1	S. W.	.04	....	...	91
	Winter	...	82	...	...	...	1	...	...	0	N. E.	.98	....	...	91
	The year	...	145	...	...	...	218	...	...	3	S. W.	.20	....	...	366
34 & 35. Dodabetta.	Spring	7	24	38	16	2	1	1	3	...	N. 79° 4′ E.	.69	S. 79½° E.	.46	
	Summer	8	3	2	1	0	2	16	60	...	N. 47 29 W.	.81	N. 68½ W.	.88	
	Autumn	15	15	18	14	4	3	5	17	...	N. 41 51 E.	.32	N. 37 W.	.02½	
	Winter	10	18	26	26	8	1	0	1	...	S. 86 15 E.	.62	S. 56½ E.	.47	
	The year	40	60	84	57	14	7	22	81	...	N. 45 42 E.	.31½			
36. Madras, 1837–43.	Spring	20	61	81	765	419	336	86	45	38	S. 17 32 E.	.57			
	Summer	19	18	39	265	254	603	424	217	37	S. 54 45 W.	.64			
	Autumn	202	423	140	270	144	230	142	174	113	N. 59 33 E.	.13			
	Winter	198	809	351	240	68	40	10	64	57	N. 61 53 E.	.62			
	The year	439	1311	611	1540	885	1209	662	500	245	S. 29 51 E.	.16			
37. Madras, 1847–50.	Spring	0	4	2	15	54	11	4	2	0	S. 1 44 E.	.74	S. 11 E.	.59	
	Summer	0	0	0	1	12	49	27	3	0	S. 54 17 W.	.85	S. 61 W.	.69	
	Autumn	20	16	2	2	12	14	16	9	0	N. 50 40 W.	.24	N. 17½ W.	.32½	
	Winter	19	48	10	4	7	2	0	0	0	N. 47 28 E.	.68	N. 44 E.	.85	
	The year	39	68	14	22	85	76	47	14	0	S. 29 40 W.	.18			

(Nos. 38 to 48.) **Bay of Bengal, Gulf of Siam, China Sea and Pacific Ocean.**

West of Longitude 180°, viz. :—

Bay of Bengal, at sea, for an aggregate period of nearly 4½ years.

China Sea, for an aggregate period of over 4 years.

Gulf of Siam, for an aggregate period of 34 days.

Pacific Ocean, for an aggregate period of 1½ years.

Port Blair, Andaman Islands, during the years 1868 and 1869.

St. Anna, Island of Luzon, from February, 1859, to September, 1863.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
38. Bay of Bengal, long. 80° to 85° E.[1]	Spring	13	14	20	19	11	17	26	29	35	31	27	17	23	9	32	26	19	S. 21° 14′ W.	.13	123
	Summer	0	0	2	1	0	3	5	5	20	41	62	49	21	12	10	9	6	S. 51 42 W.	.71	82
	Autumn	9	3	11	5	9	2	10	15	17	32	63	39	13	6	20	7	6	S. 47 33 W.	.46	89
	Winter	13	15	49	13	17	9	19	7	6	12	22	13	2	3	7	4	3	N. 73 11 E.	.25	72
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 28 W.	.27	366
39. Bay of Bengal, long. 85° to 90° E.[1]	Spring	23	24	77	19	25	25	51	44	49	53	116	37	20	10	16	7	40	S. 1 12 E.	.24	212
	Summer	0	0	0	0	0	3	3	7	6	62	201	70	17	7	10	0	2	S. 47 31 W.	.89	130
	Autumn	38	53	88	31	51	17	22	21	36	61	146	82	32	23	22	13	28	S. 46 30 W.	.14	248
	Winter	37	144	282	126	60	29	25	18	14	13	15	14	8	4	13	15	22	N. 50 16 E.	.66	280
	The year[2]	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	S. 25 3 W.	.14	870

[1] From observations collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.
[2] Computed from the resultants for the seasons.

(Nos. 40 to 48.) **Bay of Bengal, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
40. Bay of Bengal, long. 90° to 98° E.[1]	Spring	33	22	38	9	5	8	2	1	4	34	44	28	19	13	32	17	45	N. 58° 30′ W.	.24	....	...	118
	Summer	0	0	0	0	0	0	1	2	10	19	157	25	9	2	6	0	1	S. 46 45 W.	.90	....	...	77
	Autumn	12	29	49	31	24	17	8	4	7	7	10	12	12	8	13	7	6	N. 47 34 E.	.35	....	...	85
	Winter	61	96	111	31	10	3	9	0	3	6	1	3	0	1	7	6	1	N. 32 39 E.	.77	....	...	116
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 25 44 W.	.23	....	...	396
41. Port Blair.	January	4	...	20	...	5	...	1	...	0	...	0	...	0	...	1	...	...					
	February	1	..	17	...	4	...	3	...	0	...	0	...	0	...	3	...	...					
	March	2	...	14	...	5	...	6	...	1	...	1	...	0	...	2	...	...					
	April	1	...	8	...	5	...	7	...	3	...	4	...	1	...	1	...	...					
	May	2	...	2	...	2	...	4	...	4	...	12	...	2	...	3	...	...					
	June	0	...	0	...	0	...	1	...	3	...	25	...	0	...	1	...	...					
	July	1	...	0	...	0	...	0	...	1	...	28	...	1	...	0	...	...					
	August	0	...	0	...	0	...	0	...	2	...	25	...	3	...	1	...	...					
	September	1	...	0	...	0	...	0	...	1	...	22	...	4	...	2	...	...					
	October	1	...	6	...	2	...	3	...	6	...	10	...	1	...	2	...	...					
	November	2	...	16	...	2	...	6	...	0	...	2	...	1	...	1	...	...					
	December	4	...	21	...	3	...	2	...	0	...	0	...	0	...	1	...	...					
	Spring	5	...	24	...	12	...	17	...	8	...	17	...	3	...	6	...	...	S. 75 0 E.	.24½	N. 84° E.	.21	
	Summer	1	...	0	...	0	...	1	...	6	...	78	...	4	...	2	...	...	S. 45 18 W.	.92	S. 50 W.	.87½	
	Autumn	4	...	22	...	4	...	9	...	7	...	34	...	6	...	5	...	...	S. 27 56 W.	.20	S. 51½ W.	.15	
	Winter	9	...	58	...	12	...	6	...	0	...	0	...	0	...	5	...	...	N. 47 28 E.	.81	N. 42 E.	.85½	
	The year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 15 33 E.	.09			
42. Gulf of Siam, long. 100° to 105° E.[1]	Summer	0	0	0	0	0	0	0	1	0	2	6	8	0	0	0	0	0	S. 49 52 W.??	.88	....	...	6
	Autumn	0	0	5	3	4	0	2	0	1	0	3	0	1	2	2	0	7	N. 67 32 E.??	.19	....	...	10
	Winter	1	2	7	12	7	4	2	0	0	0	1	3	0	0	1	2	11	N. 67 7 E.??	.47	....	...	18
43. China Sea, long. 106° to 110° E.[1]	Spring	7	12	29	10	14	9	15	4	20	0	4	1	1	0	4	3	3	N. 83 17 E.	.45	....	...	45
	Summer	0	0	0	1	3	2	5	3	37	4	23	13	7	3	2	0	3	S. 24 49 W.	.69	....	...	35
	Autumn	27	15	31	9	16	2	12	7	23	14	66	19	10	3	5	2	5	S. 33 22 W.	.15	....	...	89
	Winter	30	33	93	17	13	6	3	0	0	0	0	0	0	0	1	6	0	N. 39 42 E.	.87	....	...	67
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 26 E.	.16	....	...	236
44. China Sea, long. 110° to 115° E.[1]	Spring	36	30	149	42	60	36	71	13	47	19	51	4	7	3	11	2	12	N. 85 44 E.	.41	East.	.26	198
	Summer	11	2	8	4	12	6	38	27	75	110	241	40	30	13	16	1	3	S. 29 58 W.	.69	S. 38 W.	.80	212
	Autumn	92	43	186	45	41	16	28	33	64	64	165	45	48	15	55	26	10	N. 23 23 W.	.04	N. 87 W.	.16	325
	Winter	46	76	192	22	36	5	3	5	0	0	3	0	1	3	5	3	0	N. 40 10 E.	.85	N. 33 E.	.74	133
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 54 E.	.15	....	...	868
45. China Sea, long. 115° to 120° E.[1]	Spring	19	14	52	21	47	23	27	6	10	5	15	5	9	1	6	2	6	N. 77 11 E.	.38	....	...	89
	Summer	5	3	11	5	15	23	37	18	34	68	96	23	37	5	15	11	0	S. 25 42 W.	.51	....	...	135
	Autumn	69	27	121	40	64	16	17	20	41	14	74	16	23	9	43	18	5	N. 43 6 E.	.21	....	...	206
	Winter	14	21	63	24	17	9	1	0	0	0	1	1	3	2	1	1	12	N. 50 36 E.	.72	....	...	59
	The year[2]	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 14 E.	.22	....	...	489
46. St. Anna.	January	1	...	16	...	4	...	0	...	0	...	6	...	0	...	4							
	February	6	...	8	...	3	...	1	...	0	...	5	...	2	...	3							
	March	8	...	12	...	2	...	4	...	0	...	2	...	2	...	1							
	April	0	...	7	...	7	...	13	...	0	...	2	...	1	...	0							
	May	0	...	3	...	4	...	6	...	0	...	9	...	1	...	8							
	June	0	...	0	...	2	...	6	...	0	...	17	...	1	...	4							
	July	0	...	1	...	2	...	3	...	0	...	23	...	2	...	0							
	August	0	...	1	...	0	...	0	...	0	...	27	...	3	...	0							
	September	0	...	1	...	0	...	0	...	5	...	23	...	1	...	0							
	October	0	...	8	...	10	...	3	...	0	...	7	...	1	...	2							
	November	0	...	12	...	4	...	0	...	0	...	8	...	1	...	5							
	December	0	...	23	...	2	...	2	...	0	...	3	...	0	...	1							
	Spring	8	...	24	...	12	...	17	...	6	...	17	...	3	...	6	...	...	S. 87 49 E.	.23½	N. 68 E.	.22	
	Summer	0	...	0	...	0	...	1	...	8	...	78	...	4	...	2	...	...	S. 43 50 W.	.93	S. 49 W.	.89	
	Autumn	0	...	22	...	4	...	9	...	7	...	34	...	6	...	5	...	...	S. 22 47 W.	.23	S. 43 W.	.17	
	Winter	7	...	58	...	12	...	6	...	0	...	0	...	0	...	5	...	...	N. 48 30 E.	.81½	N. 43 E.	.86	
	The year	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	S. 17 36 E.	.09	....	...	
47. Pacific Ocean, long. 120° to 130° E.[1]	Spring	10	2	54	33	45	5	20	5	24	9	24	7	14	1	12	6	3	N. 86 53 E.	.33	S. 83 E.	.09	91
	Summer	9	1	20	3	11	9	18	7	67	16	50	16	11	2	32	4	9	S. 24 49 W.	.35	S. 64 W.	.57	97
	Autumn	9	1	11	9	4	10	12	4	9	7	6	9	6	1	5	5	0	S. 52 5 E.	.14	S. 51¼ W.	.17	36
	Winter	6	19	103	16	32	9	5	0	1	0	0	0	0	0	5	0	0	N. 54 44 E.	.86	N. 44 E.	.65	65
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 48 E.	.25	....	...	289
48. Pacific Ocean, long. 130° to 150° E.[1]	Spring	3	8	117	61	79	20	12	0	2	0	0	0	0	0	0	2	0	N. 68 0 E.	.88	N. 43 E.	.33	101
	Summer	0	0	6	22	15	1	14	3	7	0	13	9	0	0	0	0	0	S. 59 28 E.	.44	S. 34¼ W.	.38	30
	Autumn	1	0	1	6	16	2	0	0	7	4	3	0	0	0	0	1	0	S. 66 28 E.	.54	S. 17¾ W.	.32	14
	Winter	7	21	144	92	54	3	1	3	0	0	0	0	3	2	9	2	2	N. 55 13 E.	.86	N. 15¾ E.	.41	114
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 80 56 E.	.60	....	...	259

[1] From observations collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent. [2] Computed from the resultants for the seasons.

Addendum to Zone No. 16.

(24(*b*).) Observations at Gorée, Cape Verde, by Dr. Borius, 1856–65. In days.

Time of the year.	North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm.	Total number of observations.
Spring	31	36	8	0	0	1	2	4	10	4610
Summer	11	10	1	2	5	12	25	15	11	4610
Autumn	21	20	6	4	4	7	8	9	12	4605
Winter	20	41	19	1	0	0	0	1	8	4510
The year	83	107	34	7	9	20	35	29	41	17335

(49.) Observations on the Indian Ocean, calculated at the Meteorological Institute of the Netherlands, under Capt. Corneilissen's direction.

	Time of the year.	Between N. and E.	Between E. and S.	Between S. and W.	Between W. and N.	Calm.
Between 80° and 90° E.	Spring	15	26	33	9	7
	Summer	1	8	76	12	3
	Autumn	27	19	37	14	3
	Winter	71	15	5	6	2
Between 90° and 100° E.	Spring	26	9	32	25	8
	Summer	1	7	83	9	1
	Autumn	25	14	37	20	4
	Winter	71	6	2	18	3

ZONE No. 17.

LATITUDE 5° TO 10° NORTH.

The data for the study of the winds of this zone consist of observations made at over 16 stations on land, for an aggregate period of 27 years; at sea for over 40 years 6 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	4221 days = 11 years 6 months.
America,	11	13 years 9 months.
Atlantic Ocean,	....	over 9 years.
Africa,	3	5 years 3 months.
Indian Ocean,	....	over 16 years.
Ceylon,	3	8 years.
China Sea,	....	4 years.

(Nos. 1 to 10.) **Pacific Ocean,** east of longitude 180°.

Computed from observations for an aggregate period of 3985 days, collected and classified from the logs of different sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent, as follows, viz.:—

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
1. Long. 145° to 165° W.	Spring	7	16	280	131	83	30	37	0	16	2	3	0	0	0	3	2	6	N. 64° 38′ E.	.80	N. $14\frac{1}{2}$° E.	.25	209
	Summer	4	6	43	22	22	14	8	3	11	0	0	0	0	0	1	0	7	N. 75 31 E.	.69	N. $3\frac{1}{4}$ W.	.07	47
	Autumn	38	27	395	246	443	187	437	190	249	34	56	11	26	4	62	9	121	S. 74 19 E.	.56	S. $25\frac{3}{4}$ W.	.29	845
	Winter	0	13	163	133	123	70	90	34	15	0	3	0	0	0	0	0	19	N 85 34 E.	.76	S. $63\frac{1}{4}$ E.	.11	221
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 3 E.	.67	....	...	1322
2. Long. 130° to 145° W.	Spring	7	70	399	117	91	25	92	13	15	2	8	3	0	0	6	2	16	N. 63 22 E.	.76	N. $12\frac{1}{4}$ E.	.50	289
	Summer	0	3	8	10	12	3	37	11	8	3	0	0	0	0	0	0	7	S. 59 4 E.	.68	S. $5\frac{1}{4}$ E.	.21	34
	Autumn	7	1	7	7	19	13	53	36	39	9	6	1	5	2	6	1	0	S. 34 52 E.	.61	S. $30\frac{1}{2}$ W.	.43	71
	Winter	6	23	142	21	78	55	97	45	11	4	5	1	1	1	3	3	20	S. 88 28 E.	.64	N. 32 E.	.14	172
	The year[1]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 76 47 E.	.58	....	...	566

[1] Computed from the resultants for the seasons.

(Nos. 3 to 10.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
3. Long. 125° to 130° W.	Spring	4	13	97	23	10	11	23	5	20	2	0	0	4	0	0	3	3	N. 68° 51′ E.	.62	N. 34° E.	.66	73
	Summer	0	0	10	3	2	15	53	9	16	3	3	0	1	0	4	4	7	S. 45 10 E.	.66	S. ½ E.	.24	43
	Autumn	0	0	9	2	4	1	24	21	30	9	5	1	1	0	0	0	0	S. 21 27 E.	.72	S. 24½ W.	.48	34
	Winter	6	0	32	21	15	1	31	11	5	0	4	0	0	0	3	0	8	S. 88 55 E.	.58	N. 27 E.	.24	46
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 56 E.	.52	....	...	198
4. Long. 120° to 125° W.	Spring	2	6	79	6	3	6	37	10	5	0	0	0	0	0	0	0	7	N. 77 20 E.	.65	N. 26½ E.	.51	54
	Summer	15	1	0	3	23	11	23	3	35	1	20	0	3	1	0	0	6	S. 32 17 E.	.45	S. 52 W.	.19	48
	Autumn	0	1	15	4	0	4	5	17	41	12	9	0	3	1	3	2	4	S. 9 47 E.	.51	S. 51½ W.	.38½	40
	Winter	3	2	11	24	23	15	39	16	22	0	2	0	0	0	0	0	10	S. 63 32 E.	.67	....	...	56
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 1 E.	.47	....	...	198
5. Long. 115° to 120° W.	Spring	5	12	61	25	28	6	31	3	13	12	11	1	0	0	0	0	6	N. 85 13 E.	.53	N. 27½ E.	.47½	71
	Summer	0	0	0	0	3	3	26	43	48	3	5	2	6	0	3	0	0	S. 11 47 E.	.80	S. 19½ W.	.39	47
	Autumn	0	6	14	9	0	0	19	3	14	13	17	3	1	0	0	0	2	S. 21 26 E.	.38	N. 9 W.	.18	34
	Winter	1	0	22	20	19	21	52	39	36	12	10	0	6	1	1	2	3	S. 43 59 E.	.61	S. 63 E.	.13	82
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 21 E.	.49	....	...	234
6. Long. 110° to 115° W.	Spring	15	5	79	19	31	17	50	7	13	5	7	0	4	0	1	0	32	N. 85 14 E.	.53	N. 37½ E.	.43	95
	Summer	5	0	2	0	1	9	14	29	29	22	23	6	24	0	10	7	7	S. 20 7 W.	.50	S. 68½ W.	.47	63
	Autumn	1	3	10	15	5	1	23	11	27	12	10	0	4	2	1	0	8	S. 29 34 E.	.47	S. 16½ W.	.12	44
	Winter	3	0	21	25	40	25	50	19	49	13	8	1	0	0	0	0	21	S. 53 7 E.	.60	S. 73½ E.	.22	92
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 50 E.	.40	....	...	294
7. Long. 105° to 110° W.	Spring	7	0	18	3	17	5	29	6	19	3	22	0	14	0	0	0	0	S. 33 20 E.	.37	N. 41½ W.	.24	48
	Summer	5	0	0	0	5	1	14	22	44	17	4	3	0	1	2	0	3	S. 6 23 E.	.73	S. 50 W.	.37	40
	Autumn	2	0	0	0	1	0	16	28	48	8	15	6	3	0	3	0	0	S. 0 44 W.	.77	S. 53 W.	.47	43
	Winter	7	2	42	46	40	15	41	15	31	13	17	6	0	0	0	0	18	S. 70 18 E.	.50	N. 18½ E.	.33½	98
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 36 43 E.	.61	....	...	229
8. Long. 100° to 105° W.	Spring	0	0	8	12	13	3	64	0	8	5	5	0	3	0	0	0	3	S. 52 58 E.	.70	N. 1½ E.	.14	41
	Summer	0	0	0	0	3	2	15	13	50	4	18	2	3	0	0	0	11	S. 0 50 E.	.75	S. 51 W.	.51	40
	Autumn	3	0	32	12	18	9	93	24	36	7	24	0	0	1	0	0	8	S. 44 54 E.	.63	S. 60½ E.	.04	90
	Winter	0	4	58	44	65	15	40	27	32	5	2	2	0	0	0	0	15	S. 79 33 E.	.64	N. 35½ E.	.39	103
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 33 E.	.59	....	...	274
9. Long. 90° to 100° W.	Spring	9	2	24	34	25	5	29	9	16	9	14	2	11	1	12	0	14	S. 75 47 E.	.32	N. 21 E.	.26½	72
	Summer	0	0	6	0	0	0	9	18	65	5	18	0	0	0	0	0	0	S. 4 1 E.	.83	S. 17 W.	.52	40
	Autumn	1	3	25	9	2	0	26	16	65	62	55	4	3	0	8	0	5	S. 7 21 W.	.58	S. 49 W.	.38	95
	Winter	17	3	147	69	29	11	17	11	36	10	5	0	0	0	0	0	33	N. 71 9 E.	.60	N. 34½ E.	.63	129
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 33 25 E.	.39	....	...	336
10. Long. 75° to 90° W.	Spring	8	8	32	4	6	16	42	4	28	21	37	25	13	2	35	10	27	S. 21 47 W.	.16	N. 89 E.	.17	106
	Summer	7	0	0	0	3	9	24	18	17	31	66	33	33	4	29	1	6	S. 47 19 W.	.58	S. 39 W.	.32	94
	Autumn	3	9	13	0	0	18	10	12	19	39	49	29	14	15	15	5	16	S. 41 57 W.	.43	S. 19 W.	.18	89
	Winter	74	20	88	20	22	4	26	5	12	0	49	22	86	17	83	8	38	N. 28 26 W.	.30	N. 12 E.	.42	191
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 57 10 W.	.27	....	...	480

(The wind columns North to Calm or variable are headed: Relative Prevalence of Winds from the Different Points of the Compass.)

[1] Computed from the resultants for the seasons.

(Nos. 11 to 13.) **Costa Rica.**

Observed at the following places, viz.:—

Heredia, by   during the year 1868.

San José, by C. N. Riotte and others, for an aggregate period of over three years in the years 1862 and 1864 to 1868 inclusive.

Place of observation.	Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
11. Heredia . . .	Spring	4	102	111	4	5	9	37	3	0	N. 65° 22′ E.	.56½
	Summer	7	49	47	90	16	20	38	9	0	S. 62 7 E.	.35½
	Autumn	5	40	82	32	13	25	26	50	0	N. 74 6 E.	.20½
	Winter	0	190	57	1	1	0	5	1	0	N. 54 17 E.	.90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 69 44 E.	.47

(The wind columns North to Calm or variable are headed: Relative Prevalence of Winds from the Different Points of the Compass.)

[1] Computed from the resultants for the seasons.

(Nos. 12 and 13.) **Costa Rica.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
12. San José. Surface winds.	Spring	43	418	179	31	4	1	12	34	111	N. 53° 41′ E.	.68½		
	Summer	20	254	91	21	8	1	11	45	191	N. 49 15 E.	.50		
	Autumn	6	242	113	55	1	4	13	88	294	N. 51 21 E.	.39		
	Winter	0	653	182	67	3	2	5	5	59	N. 54 28 E.	.85½		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 54 12 E.	.59½		
Motion of clouds.	Spring	3	82	185	15	5	2	15	11	...	N. 77 17 E.	.74		
	Summer	2	101	85	13	3	0	2	12	...	N. 65 46 E.	.78		
	Autumn	9	74	142	9	3	3	21	36	...	N. 63 40 E.	.57		
	Winter	68	172	218	23	0	0	3	3	...	N. 63 20 E.	.80½		
	The year[1]	...	...	...	...	...	...	...	...	...	N. 67 40 E.	.72		
Aggregate of the two.	Spring	46	500	364	46	9	3	27	45	111	N. 60 33 E.	.68½	N. 84° E.	.07
	Summer	22	355	176	34	11	1	13	57	191	N. 55 3 E.	.56½	S. 88 W.	.06½
	Autumn	15	316	255	64	4	7	34	124	294	N. 55 36 E.	.43	S. 64½ W.	.19
	Winter	68	825	400	90	3	2	8	8	59	N. 60 16 E.	.81	N. 65 E.	.19
	The year[1]	...	...	...	...	...	...	...	...	...	N. 58 23 E.	.62		
13. Heredia and San José combined.	Spring	50	603	475	50	14	12	64	48	111	N. 61 21 E.	.92	N. 58 E.	.26
	Summer	29	404	223	124	27	21	51	66	191	N. 73 48 E.	.51	S. 30 W.	18
	Autumn	20	356	337	96	17	32	60	174	294	N. 57 31 E.	.38½	S. 70 W.	.27
	Winter	68	1015	457	91	4	2	13	9	59	N. 59 41 E.	.82	N. 47½ E.	.17
	The year[1]	...	...	...	...	...	...	...	...	...	N. 62 43 E.	.66		

[1] Computed from the resultants for the seasons.

(Nos. 14 to 19.) **New Granada, South America.**

Observed at the following places, viz.:—

Aspinwall, by William T. White, J. P. Klugé and G. A. Rucker, for an aggregate period of 71 months in the years 1862 to 1868 inclusive.

Caledonia Bay, by Capt. John Parsons, on board the ship Scorpion, from January 24, to March 16, 1854.

Chagres, by Cobb, during the month of July.

Manzanilla, during June to October inclusive in the year 1851.

Panama, by M. B. Halsted, during 27 days of the month of September, 1853.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
14. Chagres.	July	26	14	18	5	5	25	34	7	5	N. 59° 50′ W.	.21		
15. Aspinwall.	Spring	508	291	10	153	23	61	6	513	...	N. 5 9 W.	.58		
	Summer	226	240	19	205	70	157	59	587	...	N. 27 2 W.	.35		
	Autumn	194	211	49	336	92	222	56	560	...	N. 34 13 W.	.18		
	Winter	452	478	14	72	29	34	16	498	...	N. 0 35 E.	.65½		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 10 24 W.	.43		
16. Manzanilla.	Summer	64	22	0	4	29	6	2	39	3	N. 12 15 W.	.43		
	Autumn	22	4	0	0	70	0	0	10	0	S. 6 21 W.	.36		
17. Panama.	September	4	0	2	4	3	1	5	50	8				
18. Isthmus of Darien.[1]	Spring	508	291	10	153	23	61	6	513	0	N. 5 9 W.	.51½	N. 8½° E.	.11½
	Summer	316	276	37	214	104	188	95	633	8	N. 18 16 W.	.32	S. 19 W.	.10
	Autumn	220	215	51	340	165	223	61	620	8	N. 40 42 W.	.17	S. 10 W.	.27
	Winter	452	478	14	72	29	34	16	498	0	N. 0 35 E.	.65½	N. 15 E.	.26
	The year[2]	...	...	...	...	...	...	...	...	...	N. 9 17 W.	.40½		
19. Caledonia Bay.	March	42	0	0	0	0	0	0	22	...	N. 15 7 W.	.93		
	Winter	83	2	0	0	0	0	0	55	...	N. 16 42 W.	.92		

[1] Aspinwall, Chagres, Manzanilla and Panama combined. [2] Computed from the resultants for the seasons.

(Nos. 20 to 24.) **Guiana, South America.**

Observed at the following places, and reported, for the most part, to the Smithsonian Institution.

Catharina Sophia, Surinam, by C. J. Hering, from February, 1856, to December, 1858, inclusive.

Georgetown, British Guiana, by Robert H. Schomburgk, during the years 1850, 1851, 1854, 1855, and 1856.

Our Village (near Mount Roraima), British Guiana, by Robert H. Schomburgk, from October 29 to November 16, nineteen days.

Rustenberg Plantation, Surinam, by C. J. Hering, from April, 1861.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
20. Our Village.	Autumn	1	13	5	11	0	1	5	1	6	N. 63° 40′ E.???	.31		
21. Georgetown.	Spring	0	37	50	5	0	0	0	0	0	N. 74 9 E.	.90	N. 21½° W.	.03
	Summer	0	21	62	6	0	0	1	0	2	N. 82 27 E.	.88	S. 1 W.	.10
	Autumn	0	29	59	3	0	0	0	0	0	N. 77 19 E.	.92	S. 58½ E.	.02
	Winter	0	37	51	1	0	0	0	0	1	N. 71 54 E.	.91	N. 8½ W.	.07
	The year	1	124	222	15	0	0	1	0	3	N. 76 26 E.	.90		
22. Surface winds at Catharina Sophia in 1856, 1857 and 1858.[1] No. of observations.	Spring	16	264	74	55	11	3	0	0	0	N. 63 8 E.	.788		
	Summer	12	176	117	148	59	28	2	8	2	S. 82 26 E.	.583		
	Autumn	18	224	97	109	42	18	4	34	0	N. 76 46 E.	.549		
	Winter	26	208	77	73	19	3	2	6	0	N. 68 38 E.	.693		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 75 2 E.	.637		
No. of miles.	Spring	105	2689	466	327	40	10	0	0	...	N. 56 6 E.	.856		
	Summer	114	1696	900	1006	192	161	4	50	...	N. 82 53 E.	.647		
	Autumn	265	2677	814	705	183	167	45	227	...	N. 62 13 E.	.641		
	Winter	153	2992	681	496	66	10	6	90	...	N. 58 8 E.	.804		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 62 54 E.	.731		
M'n vel. in miles p. h'r.	Spring	6.56	10.19	6.03	5.95	3.64	3.33	0	0					
	Summer	10.36	9.64	7.69	6.80	3.25	5.75	2.00	6.25					
	Autumn	14.72	11.95	8.39	6.47	4.36	9.28	11.25	6.68					
	Winter	5.88	14.38	8.84	6.79	3.47	3.33	3.00	15.00					
23 & 24. Aggregate No. of obs. at Catharina Sophia & Rustenberg. Surface winds.	Spring	101	1125	750	358	60	29	5	16	3	N. 71 55 E.	.74½		
	Summer	84	770	828	691	235	80	5	40	4	S. 86 1 E.	.65		
	Autumn	88	993	577	604	214	69	11	87	0	N. 84 9 E.	.60		
	Winter	114	980	696	374	78	14	6	15	0	N. 74 1 E.	.74		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 80 23 E.	.68		
Motion of clouds.	Spring	5	535	1262	331	13	12	8	5	...	N. 7 59 E.	.86		
	Summer	10	414	1223	694	27	11	7	13	...	S. 83 51 E.	.83		
	Autumn	18	280	987	671	46	22	8	34	...	S. 79 36 E.	.79½		
	Winter	22	429	1215	381	4	2	2	3	...	N. 88 18 E.	.87½		
	The year[2]	...	...	...	...	...	...	...	...	...	N. 87 29 E.	.83		
2 preceding combined.	Spring	106	1660	2012	689	73	41	13	21	3	N. 78 57 E.	.79½	N. 19 E.	.11
	Summer	94	1184	2051	1385	262	91	12	53	4	S. 84 52 E.	.73½	S. 5 W.	.11½
	Autumn	106	1273	1564	1275	260	91	19	121	0	S. 87 26 E.	.68	S. 42 W.	.09
	Winter	136	1409	1911	755	82	16	8	18	0	N. 81 22 E.	.79½	N. 23 E.	.09
	The year[2]	...	...	...	...	...	...	...	...	...	N. 86 35 E.	.74½		

[1] From this table we obtain the following summary of results:—

	Spring.	Summer.	Autumn.	Winter.	The year.
Average velocity of all winds in miles per hour	8.55	7.51	9.31	10.86	9.06
Velocity in mean direction, on the supposition that the winds from every point of the compass move with the foregoing average velocity	6.74	4.38	5.11	7.53	5.77
True velocity in mean direction, giving to the winds from the several points of the compass each their own average velocity, as shown in the table above	7.32	4.86	5.97	8.73	6.62
Excess of the latter over the former	+.58	+.48	+.86	+1.20	+.85

[2] Computed from the resultants for the seasons.

(Nos. 25 to 32.) **Atlantic Ocean.**

Computed from observations for an aggregate period of over 9 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
25. Long. 45° to 55° W.	Spring	0	21	152	43	27	1	8	0	0	0	0	0	0	0	0	0	0	N. 53° 39′ E.	.93	N. 31½° E.	.22	84
	Summer	2	4	62	9	7	7	15	3	4	1	3	0	7	0	0	1	9	N. 66 29 E.	.56	S. 42 W.	.18	45
	Autumn	0	9	14	10	16	7	13	6	0	0	0	0	0	1	4	0	8	N. 81 33 E.	.61	S. 7 W.	.27	29
	Winter	2	19	51	16	11	3	1	0	0	0	0	0	0	0	0	0	0	N. 50 29 E.	.91	N. 16½ E.	.23	34
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 43 E.	.73	....	...	192
26. Long. 40° to 45° W.	Spring	2	36	244	72	31	6	9	7	0	0	0	6	1	0	0	0	2	N. 53 29 E.	.90	N. 21 E.	.34	137
	Summer	5	27	104	22	35	14	48	23	24	9	26	5	16	2	3	9	34	N. 86 4 E.	.36	S. 49 W.	.31	135
	Autumn	1	3	19	25	24	27	36	13	9	1	5	1	4	2	0	0	9	S. 72 13 E.	.62	S. 1 W.	.42	60
	Winter	6	11	145	35	20	3	6	1	3	1	0	0	0	0	2	0	0	N. 53 11 E.	.88	N. 20 E.	.33	78
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 69 19 E	.63	....	...	410
27. Long. 35° to 40° W.	Spring	13	42	213	32	17	8	3	4	3	0	0	0	0	0	0	1	1	N. 47 42 E.	.90	N. 23 E.	.32	112
	Summer	9	11	74	11	17	19	26	20	21	11	5	4	14	18	12	3	27	N. 76 6 E.	.36	S. 41 W.	.21	101
	Autumn	5	9	53	28	52	22	46	16	17	5	8	4	7	6	14	9	20	S. 88 58 E.	.44	S. 25 W.	.33	107
	Winter	4	21	96	30	7	6	8	1	0	0	0	0	0	0	0	0	1	N. 52 28 E.	.88	N. 27 W.	.21	58
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 26 E.	.62	....	...	378
28. Long. 30° to 35° W.	Spring	6	13	114	34	16	6	12	3	1	0	1	0	0	0	0	0	3	N. 57 18 E.	.87	N. 37 E.	.49	70
	Summer	3	3	41	16	26	2	23	15	33	16	26	2	10	6	6	1	24	S. 48 40 E.	.05	S. 74 W.	.41	84
	Autumn	3	7	13	24	38	16	30	20	16	13	23	5	5	2	5	3	25	S. 36 6 E.	.46	S. 20 W.	.48	83
	Winter	6	9	24	23	15	5	1	2	5	2	1	0	0	0	0	0	7	N. 65 24 E.	.38	N. 47¼ W.	.12	33
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 54 E.	.44	....	...	270
29. Long. 25° to 30° W.	Spring	2	17	78	49	42	5	12	0	4	0	0	0	1	0	0	1	1	N. 65 54 E.	.68	N. 5 E.	.41	72
	Summer	0	8	6	25	11	74	63	51	10	5	0	3	2	3	0	1	1	S. 56 38 E.	.69	S. 2½ W.	.25	88
	Autumn	1	4	5	18	28	77	120	79	21	9	1	2	0	1	1	2	14	S. 48 59 E.	.80	S. 1½ E.	.40	127
	Winter	5	41	20	25	30	83	50	36	2	7	0	4	1	1	3	11	28	S. 80 53 E.	.56	N. 48½ W.	.05	116
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 11 E.	.60	....	...	403
30. Long. 20° to 25° W.	Spring	44	105	37	58	10	12	7	11	2	8	2	7	2	8	5	27	5	N. 31 41 E.	.63	N. 14 E.	.51	117
	Summer	15	30	26	24	5	27	51	227	229	206	43	81	13	8	6	32	72	S. 2 19 W.	.57	S. 20½ W.	.65	368
	Autumn	7	50	24	30	16	41	24	61	62	106	39	36	5	9	5	17	46	S. 10 18 E.	.32	S. 23 W.	.38	193
	Winter	26	86	63	58	20	22	5	7	0	5	1	3	0	5	0	15	21	N. 43 44 E.	.69	N. 30 E.	.51	112
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 52 E.	.21	....	...	790
31. Long. 10° to 20° W.	Spring	12	33	7	13	2	2	1	5	1	12	4	8	1	38	14	20	14	N. 14 56 W.	.46	N. 6½ W.	.06	62
	Summer	2	2	2	7	7	30	22	290	441	350	35	77	10	7	2	8	47	S. 4 6 W.	.88	S. 1 W.	.72	456
	Autumn	1	16	4	16	7	38	15	68	97	149	30	37	11	17	3	7	64	S. 7 29 W.	.55	S. 3 W.	.39	193
	Winter	11	79	13	16	9	9	6	5	5	18	3	20	11	42	8	31	69	N. 9 9 W.	.31	N. ½ W.	.05	118
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 18 12 W.	.16	....	...	829
32. Long. 10° to 55° W.	January	19	85	140	66	34	18	11	5	5	6	2	8	1	19	1	17	19	N. 47 5 E.	.65	N. 18½ E.	.43½	152
	February	27	64	215	95	32	16	10	1	2	7	1	9	7	14	7	18	20	N. 44 56 E.	.72	N. 20¾ E.	.49	182
	March	26	107	294	102	37	7	18	4	8	9	2	4	0	22	7	15	14	N. 45 3 E.	.74	N. 22 E.	.50	225
	April	30	108	325	114	32	14	13	4	0	2	2	4	2	14	6	17	4	N. 44 50 E.	.82	N. 24¾ E.	.58	230
	May	27	53	226	85	76	19	21	22	3	9	3	7	3	10	6	17	8	N. 55 38 E.	.69	N. 35 E.	.41	198
	June	22	47	215	68	68	35	65	72	72	76	25	29	8	12	21	31	88	S. 89 1 E.	.30	S. 30¾ W.	.07	318
	July	19	26	104	30	45	36	93	225	239	188	63	73	33	30	30	21	17	S. 7 1 E.	.45	....	...	450
	August	6	11	32	16	29	40	53	307	514	368	94	93	48	18	9	13	74	S. 4 59 W.	.71	S. 25 W.	.83	575
	September	8	27	13	10	31	29	61	115	145	174	97	60	20	18	16	14	44	S. 8 26 W.	.58	S. 30½ W.	.32	294
	October	11	40	59	50	55	68	72	75	76	100	33	26	21	16	20	18	115	S. 38 2 E.	.30	S. 22½ W.	.01	285
	November	6	35	91	101	118	95	80	35	43	30	12	6	6	5	2	6	62	S. 82 15 E.	.55	S. 63½ E.	.27½	244
	December	17	89	104	63	71	31	26	16	11	15	2	7	4	14		12	70	N. 60 25 E.	.52	N. 30¼ E.	.23	185
	The year	218	692	1817	800	628	408	523	881	1118	984	336	326	153	192	119	195	627	N. 80 32 E.	.34	....	...	3338

[1] Computed from the resultants for the seasons.

(No. 33.) **Liberia, Africa.**

Observed at Bassa Cove, during the autumn of 1839, as follows:—

North 8, East 6, S. E. 2, South 7, S. S. W. 33, S. W. 151, West 22, N. W. 4.

Direction of resultant S. 49° 6′ W. (?)

Ratio of resultant to sum of winds .84.

(No. 33(*a*).) **Guinea, Africa.**

Observed at Christiansborg, Gold Coast, by J. J. Trentophol, R. Chenon and F. Sannom, five times a day, for an aggregate period of more than five years, in the years 1829 to 1834 inclusive.

Time of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.
		Relative Prevalence of Winds from the Different Points of the Compass.																
6 or 7 o'clock A. M.	Spring	1	0	2	0	4	0	0	0	0	0	15	1	10	4	415	17	3
	Summer	0	0	0	0	0	0	0	0	0	3	73	26	53	7	213	8	4
	Autumn	0	1	2	0	1	0	1	0	0	2	32	13	32	8	231	6	2
	Winter	9	1	6	0	0	0	0	0	0	0	2	1	0	1	395	7	1
9 o'clock A. M.	Spring	5	0	3	0	2	0	2	0	2	4	207	67	68	7	99	0	3
	Summer	0	0	0	0	0	0	0	0	0	2	232	70	30	5	44	1	0
	Autumn	0	1	3	0	0	0	0	1	0	0	256	9	17	4	40	0	0
	Winter	7	1	9	0	2	0	2	0	0	0	124	11	46	9	197	2	9
Noon.	Spring	0	0	2	0	1	0	4	2	0	4	448	2	1	1	5	0	1
	Summer	0	0	0	0	0	0	1	0	1	2	379	1	0	1	0	0	0
	Autumn	0	0	0	0	3	0	2	1	0	1	323	0	0	0	1	0	0
	Winter	1	1	6	0	5	0	15	0	4	1	369	6	2	1	6	0	2
4 o'clock P. M.	Spring	0	0	2	0	1	0	5	2	1	7	431	0	1	0	12	0	1
	Summer	0	0	0	0	0	0	1	0	2	8	369	2	0	0	0	0	0
	Autumn	0	0	1	0	1	0	4	0	1	2	310	1	1	0	2	0	1
	Winter	0	0	4	0	1	0	19	1	3	5	373	1	2	0	4	0	0
9 or 10 o'clock P. M.	Spring	0	0	1	0	0	0	0	0	4	45	385	1	0	0	20	0	3
	Summer	0	0	0	0	0	0	0	0	1	75	292	3	1	0	4	0	0
	Autumn	0	0	0	0	1	0	1	1	7	15	255	6	9	1	11	0	0
	Winter	0	0	0	0	1	0	14	0	1	10	367	1	1	0	17	0	0
Aggregate.	Spring	6	0	10	0	8	0	11	4	7	60	1486	71	80	12	551	17	11
	Summer	0	0	0	0	0	0	2	0	4	90	1345	102	84	13	261	9	4
	Autumn	0	2	6	0	6	0	8	3	8	20	1176	29	59	13	287	6	3
	Winter	17	3	25	0	9	0	50	1	8	16	1235	20	51	11	617	9	12

Mr. Pederson, in his reductions of the above-named observations, gives the directions of the resultants for each month of the year as follows, from which it appears that they depend much more on the hour of the day when the observations are made than upon the month or season of the year.

Hour.	January.	February.	March.	April.	May.	June.
6 o'clock A. M.	N. 45° 1′ W.	N. 43° 2′ W.	N. 44° 0′ W.	N. 45° 3′ W.	N. 48° 1′ W.	N. 51° 7′ W.
7 " "	N. 40 2 W.	N. 45 4 W.	N. 46 6 W.	N. 47 0 W.	N. 47 9 W.	N. 66 6 W.
9 " "	N. 72 0 W.	N. 77 9 W.	S. 87 7 W.	S. 61 6 W.	S. 72 6 W.	S. 74 7 W.
Noon	S. 43 3 W.	S. 42 0 W.	S. 44 9 W.	S. 45 7 W.	S. 44 6 W.	S. 44 4 W.
4 o'clock P. M.	S. 38 5 W.	S. 43 6 W.	S. 45 7 W.	S. 45 9 W.	S. 44 0 W.	S. 44 5 W.
9–10 " "	S. 41 3 W.	S. 47 2 W.	S. 45 5 W.	S. 46 4 W.	S. 43 6 W.	S. 43 5 W.

Hour.	July.	August.	September.	October.	November.	December.
6 o'clock A. M.	N. 68° 2′ W.	N. 77° 6′ W.	N. 70° 0′ W.	N. 49° 9′ W.	N. 43° 2′ W.	N. 45° 0′ W.
7 " "	N. 69 4 W.	S. 78 9 W.	N. 75 3 W.	N. 51 9 W.	N. 47 0 W.	N. 38 6 W.
9 " "	S. 59 3 W.	S. 52 0 W.	S. 46 8 W.	S. 55 2 W.	S. 79 2 W.	N. 82 0 W.
Noon	S. 44 8 W.	S. 45 3 W.	S. 45 0 W.	S. 44 0 W.	S. 43 4 W.	S. 46 5 W.
4 o'clock P. M.	S. 43 3 W.	S. 45 0 W.	S. 45 5 W.	S. 45 5 W.	S. 43 0 W.	S. 43 9 W.
9–10 " "	S. 42 9 W.	S. 39 8 W.	S. 45 2 W.	S. 50 8 W.	S. 43 2 W.	S. 46 5 W.

(Nos. 33(*b*) and 33(*c*).) **Central Africa.**

Tewfikeeyah, Latitude 9° 25′ North, Longitude 31° 30′ East. Observed by Lieut. Julian A. Baker, R. N., from July 23 to August 11, and from September 4 to 15, 1870.

(Nos. 33(*b*) and 33(*c*).) **Central Africa.**—*Continued.*

White Nile, between 5° and 15° 36′ North Latitude, and 31° to 34° East Longitude. Observed during tours by Lady Baker, from May 26 to July 7, 1873.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
33(*b*). Tewfikeeyah.	July and August	2	0	0	2	12	6	0	5	15	S. 27° 41′ W.	.33
	September	2	4	0	3	4	0	0	0	10	S. 72 20 E.	.22½
33(*c*). White Nile.	May	0	0	0	0	3	0	0	0	3	South.	.50
	June and July	4	0	0	0	25	0	1	2	5	S. 7 1 W.	.53

(No. 34.) **Abyssinia,** latitude 9° to 10° north.

Computed from observations made by Rev. H. Hunter, for 7 days in the winter of 1777–8, as follows:—

N. E. 2, S. E. 2, West 2, Calm 1.

Direction of resultant due east (???).

Ratio of resultant to sum of winds .12.

(Nos. 35 to 37.) **Indian Ocean,** longitude 40° to 80° east.

From observations for an aggregate period of over two years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
35. Longitude 40° to 60° E.	Spring	12	14	56	25	11	8	8	1	2	4	12	10	2	0	2	0	0	N. 55° 32′ E.	.51	N. 66¼°E.	.43	57
	Summer	0	1	0	0	0	0	1	0	4	21	131	17	18	3	1	0	3	S. 48 39 W.	.91	S. 44 W.	.97	68
	Autumn	4	4	30	14	2	0	0	2	0	11	20	35	9	20	20	8	3	N. 67 17 W.	.34	N. 87½ W.	.34	61
	Winter	3	16	63	19	3	0	1	0	0	0	0	0	0	0	0	0	0	N. 46 14 E.	.95	N. 51 E.	.81	35
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	N. 12 40 E.	.12	....	...	221
36. Longitude 60° to 75° E.	Spring	19	20	23	0	1	0	0	0	0	4	14	14	20	8	19	20	1	N. 34 29 W.	.52	N. 2½ E.	.15	55
	Summer	0	0	0	0	0	3	3	0	1	7	91	73	18	17	16	0	0	S. 63 59 W.	.85	S. 35½ W.	.80	77
	Autumn	6	3	16	2	6	0	0	0	2	0	11	10	9	33	36	2	0	N. 52 55 W.	.57	N. 66½ W.	.16	46
	Winter	36	40	68	7	3	0	1	0	1	0	5	0	5	2	8	5	0	N. 23 13 E.	.78	N. 54 E.	.75	61
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 47 11 W.	.41	....	...	250
37. Longitude 75° to 80° E.	Spring	9	4	8	3	8	1	8	12	6	9	33	33	28	31	52	4	10	N. 87 57 W.	.48	S. 30 W.	.17	87
	Summer	0	0	1	0	0	1	4	1	5	1	14	17	22	34	26	7	0	N. 82 47 W.	.73	S. 76¾ W.	.33½	45
	Autumn	8	14	4	3	12	0	5	6	18	16	20	31	50	35	58	10	1	N. 82 1 W.	.51	S. 49½ W.	.14	97
	Winter	74	56	105	10	21	14	7	1	4	8	16	14	24	7	35	20	22	N. 14 23 E.	.50	N. 58½ E.	.61	146
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 19 W.	.43	.. ..	...	375

[1] Computed from the resultants for the seasons.

(Nos. 38 to 41.) **Island of Ceylon, Indian Ocean.**

Observed at the following places, viz.:—

Colombo, during a period of six years, from 1853 to 1859.

Point de Galle, during the year 1854.

Trincomalu, during the year 1854.

(Nos. 38 to 41.) **Island of Ceylon.**—*Continued.*

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
38 to 41. Colombo.	January	5	14	1	1	0	1	0	3	1				
	February	1	11	1	1	1	1	1	1	6				
	March	0	1	2	4	1	3	2	1	10				
	April	0	0	1	6	3	5	4	1	6				
	May	0	0	0	2	1	17	3	1	4				
	June	0	0	0	0	1	18	6	0	1				
	July	0	0	0	0	1	16	9	1	0				
	August	0	0	0	1	0	15	10	0	1				
	September	0	0	0	0	1	16	9	0	1				
	October	0	0	1	2	2	11	8	2	2				
	November	4	7	3	2	1	2	2	2	2				
	December	6	13	1	2	0	1	0	0	2				
	Spring	0	1	3	12	5	25	9	3	20	S. 30° 23′ W.	.42	S. 10½° E.	.23
	Summer	0	0	0	1	2	49	25	1	2	S. 58 22 W.	.88	S. 57 W.	.59
	Autumn	4	7	4	4	4	29	19	4	5	S. 63 1 W.	.43	S. 67 W.	.15
	Winter	12	38	3	4	1	3	1	4	9	N. 36 48 E.	.59	N. 45 E.	.86
	The year	16	46	10	21	12	106	54	12	36	S. 60 47 W.	.29		

(Nos. 42 to 49.) **Indian Ocean, China Sea and Pacific Ocean.**

West of longitude 180°.

Indian Ocean, for an aggregate period of over six years.

China Sea, for an aggregate period of over four years.

Pacific Ocean, for an aggregate period of over four years.

From observations collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
42. Indian Ocean, long. 80° to 85° E.	Spring	8	12	36	17	14	8	18	19	11	17	43	33	37	6	10	7	7	S. 49° 7′ W.	.16	S. 65° E.	.05½	103
	Summer	0	0	0	0	2	0	2	5	15	21	120	78	43	21	3	2	5	S. 57 32 W.	.84	S. 55½ W.	.65	106
	Autumn	18	17	22	11	15	15	22	20	18	36	72	72	43	16	28	0	18	S. 54 9 W.	.35	S. 42½ W.	.17	148
	Winter	19	29	59	43	29	2	12	1	0	4	3	3	3	19	6	3	5	N. 44 40 E.	.59	N. 50 E.	.74	80
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 64 8 W.	.19	....	...	437
43. Indian Ocean, long. 85° to 90° E.	Spring	28	37	79	48	65	46	57	23	27	38	79	95	29	9	17	4	32	S. 37 27 E.	.14	N. 85½ E.	.16½	235
	Summer	0	0	1	4	2	7	6	4	14	24	117	65	17	0	3	1	6	S. 45 43 W.	.79	S. 48½ W.	.64	91
	Autumn	21	17	62	25	28	2	36	14	18	65	150	111	62	19	21	18	26	S. 54 46 W.	.35	S. 69 W.	.22	232
	Winter	32	141	194	95	69	39	30	19	13	9	5	19	33	8	9	13	16	N. 51 5 E.	.58	N. 48 E.	.72	248
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 32 9 W.	.15	....	...	806
44. Indian Ocean, long. 90° to 95° E.	Spring	5	16	40	14	4	4	15	8	14	31	60	31	15	5	8	1	7	S. 36 7 W.	.24	S. 38 W.	.21	93
	Summer	0	0	8	0	1	2	13	6	34	134	197	73	17	2	2	0	2	S. 37 51 W.	.86	S. 44½ W.	.07	164
	Autumn	19	19	30	35	35	8	11	7	19	12	36	41	32	32	5	9	10	N. 73 13 W.	.06½	N. 1¾ E.	.07	120
	Winter	15	27	88	28	19	4	13	2	2	7	3	1	1	0	8	16	0	N. 45 44 E.	.67	N. 44 E.	.28	78
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 33 6 W.	.11	....	...	455
45. Indian Ocean, long. 95° to 105° E.	Spring	15	18	40	38	22	17	21	13	21	14	44	28	22	27	32	22	71	N. 34 1 W.	.05	S. 89 W.	.08	155
	Summer	4	4	13	3	20	6	38	33	48	23	57	25	43	19	15	8	21	S. 26 34 W.	.40	S. 38½ W.	.48	127
	Autumn	14	15	42	40	38	11	22	11	10	11	35	19	36	22	22	6	23	N. 48 30 E.	.07	N. 43 W.	.01	126
	Winter	24	35	91	32	37	7	14	1	1	2	6	5	5	4	24	11	19	N. 41 10 E.	.58	N. 39½ E.	.51	106
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 53 54 E.	.07	....	...	514
46. China Sea, long. 105° to 110° E.	Spring	17	23	144	69	80	22	41	13	52	23	46	9	11	5	8	5	14	N. 85 12 E.	.41	....	...	194
	Summer	3	0	3	3	20	3	22	11	65	91	201	22	35	15	22	1	4	S. 35 46 W.	.71	....	...	174
	Autumn	64	51	164	35	64	14	31	12	50	66	212	58	109	30	57	6	32	S. 80 19 W.	.13	....	...	352
	Winter	75	185	231	44	10	3	5	0	4	1	0	1	0	4	3	6	0	N. 33 31 E.	.89	....	...	191
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	N. 62 48 E.	.10	....	...	911

[1] Computed from the resultants for the seasons.

(Nos. 47 to 49.) **Indian Ocean.**—*Continued.*

Place of observation	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
47. China Sea, long. 110° to 115° E.	Spring	12	16	40	8	31	7	6	3	11	5	16	12	32	6	2	4	8	N. 39° 21′ E.	.14	....	...	73
	Summer	1	0	1	0	1	1	4	2	40	24	98	31	12	0	13	0	2	S. 41 36 W.	.80	....	...	77
	Autumn	34	13	57	9	8	12	5	6	28	23	69	27	47	10	18	14	10	S. 88 0 W.	.20	....	...	130
	Winter	10	18	30	10	5	0	3	0	0	0	0	0	0	3	1	0	0	N. 38 34 E.	.82	....	...	27
	The year[1]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	N. 41 5 W.	.05	....	...	307
48. China Sea, long. 115° to 125° E.	Spring	9	10	25	15	15	7	28	3	37	2	15	14	19	3	25	18	1	S. 67 31 E.	.03	....	...	82
	Summer	8	2	23	17	36	15	57	38	97	67	98	21	49	12	19	2	11	S. 10 53 W.	.47	....	...	191
	Autumn	8	7	34	7	4	2	9	10	18	10	37	13	20	5	17	9	8	S. 71 0 W.	.16	....	...	73
	Winter	0	0	6	1	0	3	0	6	2	0	0	0	0	1	0	0	0	S. 70 6 E.	.50	....	...	6
	The year[1]	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 20 21 E.	.19	....	...	352
49. Pacific Ocean, long. 125° to 150° E.	Spring	11	13	78	30	21	3	13	3	3	0	7	2	13	3	17	7	1	N. 44 6 E.	.54	N. 58° E.	.32	75
	Summer	12	1	9	25	11	1	14	1	12	12	6	8	12	5	2	0	4	S. 61 53 E.	.15	S. 38¾ W.	.37	45
	Autumn	1	0	5	0	1	0	0	0	0	0	7	1	14	3	7	1	1	N. 75 12 W.	.58	S. 84 W.	.66	14
	Winter	7	17	124	49	27	4	6	2	9	0	8	8	13	9	7	4	0	N. 48 44 E.	.61	N. 68¾ E.	.28	98
	The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	..	N. 24 46 E.	.24	....	...	232

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 17.

Observations on the Indian Ocean calculated by the Meteorological Institute of the Netherlands, under Captain Cornelissen.

		Between N. and E.	Between E. and S.	Between S. and W.	Between W. and N.	Calm.
50. Between 80° and 90° E.	Spring	29	21	34	13	3
	Summer	1	8	76	13	2
	Autumn	16	13	51	18	3
	Winter	62	14	7	11	2
Between 90° and 100° E.	Spring	31	15	32	16	7
	Summer	4	16	67	10	3
	Autumn	24	20	33	23	4
	Winter	68	11	3	16	3

ZONE No. 18.

Latitude 0° to 5° North.

The data for the study of the winds of this zone consist of observations made at 5 stations on land, for an aggregate period of over 10 years 5 months; at sea for about 62 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	14,291 days = 39 years 8 months.
South America,	2	9 years 1 month.
Atlantic Ocean,	....	over 8 years.
Africa,	2	1 year 2 months.
Indian Ocean,	....	over 8 years 6 months.
Asia,	1	2 months.
China Sea,	....	1003 days = 2 years 8 months.
Celebes Sea,	....	1178 days = 3 years 2 months.

(Nos. 1 to 15.) **Pacific Ocean**, east of longitude 180°.

From observations made for an aggregate period of 38 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Long. 155° to 165° W.	Spring	4	14	69	88	143	33	44	6	16	3	6	0	0	0	0	0	3	N. 83° 29′ E.	.56	N. 29½° W.	.31	143
	Summer	0	0	20	6	50	41	39	21	4	0	0	0	0	0	0	0	0	S. 70 42 E.	.84	S. 48½ E.	.11	60
	Autumn	2	9	19	40	210	272	478	102	42	1	6	0	0	0	3	0	11	S. 58 31 E.	.80	S. 7¼ W.	.21	398
	Winter	10	1	56	48	127	121	118	21	13	0	0	0	0	0	0	0	10	S. 78 38 E.	.80	N. 59¼ E.	.08	175
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 57 E.	.74	....	...	776
2. Long. 145° to 155° W.	Spring	26	6	93	88	161	44	66	3	0	0	0	0	0	0	0	3	7	N. 80 13 E.	.80	N. 14 E.	.33½	165
	Summer	0	6	12	9	9	5	19	21	2	0	0	0	0	0	0	0	0	S. 70 25 E.	.69	S. 56 W.	.08	28
	Autumn	10	1	27	18	97	124	271	84	65	8	38	1	3	1	8	0	13	S. 48 21 E.	.73	S. 29 W.	.34	256
	Winter	3	9	44	31	163	108	111	16	5	0	0	0	0	0	0	0	2	S. 77 51 E.	.85	N. 85 E.	.12	164
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 0 E.	.73	....	...	613
3. Long. 135° to 145° W.	Spring	3	3	76	82	161	63	135	14	2	0	0	0	1	5	0	0	11	S. 84 39 E.	.80	N. 4½ E.	.21½	185
	Summer	0	0	0	0	26	73	63	12	0	0	0	0	0	0	0	0	0	S. 59 37 E.	.95	S. 12 E.	.20	58
	Autumn	0	0	0	21	27	18	23	23	6	6	0	0	0	0	0	0	0	S. 58 50 E.	.80	S. 36¾ W.	.17	41
	Winter	4	0	45	51	182	133	106	25	3	0	5	0	0	0	0	0	7	S. 77 21 E.	.84	N. 21 E.	.11	187
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 69 50 E.	.83	....	...	471
4. Long. 130° to 135° W.	Spring	0	3	58	25	185	65	212	54	31	0	6	0	0	0	0	0	16	S 67 11 E.	.79	N. 1½ W.	.13	220
	Summer	0	0	0	4	30	30	97	22	6	0	0	0	0	0	0	0	0	S. 52 22 E.	.92	South.	.13	63
	Autumn	0	0	0	6	21	49	78	21	3	0	3	0	0	0	0	0	0	S. 54 7 E.	.90	S. 2 E.	.09	60
	Winter	0	3	39	29	87	78	226	32	7	0	6	0	0	0	3	0	18	S. 64 28 E.	.80	N. 1 W.	.08½	179
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 12 E.	.85	....	...	522
5. Long. 125° to 130° W.	Spring	0	12	61	36	168	79	224	85	14	0	8	4	10	0	0	0	24	S. 67 26 E.	.74	N. 10 W.	.18	249
	Summer	0	0	0	0	12	72	91	17	3	0	0	0	0	0	0	0	3	S. 53 29 E.	.94	S. 21 E.	.11	66
	Autumn	0	0	13	0	24	39	93	30	39	0	0	0	0	0	0	0	0	S. 46 49 E.	.84	S. 41 W.	.15	79
	Winter	0	0	15	13	95	174	267	29	2	0	0	0	0	0	0	0	7	S. 60 41 E.	.89	N. 68½ E.	.07	201
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 43 E.	.85	....	...	595
6. Long. 120° to 125° W.	Spring	4	3	66	13	99	126	287	74	30	3	8	3	3	0	2	0	24	S. 59 34 E.	.76	N. 31 W.	.09	252
	Summer	13	0	3	3	26	122	227	34	6	0	0	0	1	0	0	0	3	S. 54 10 E.	.89	S. 15½ E.	.07	146
	Autumn	0	0	0	6	66	113	130	15	5	6	0	0	0	0	2	0	3	S. 60 0 E.	.90	N. 8¼ E.	.08	115
	Winter	0	0	14	19	133	146	390	80	36	3	8	0	3	0	3	0	34	S. 53 55 E.	.84	S. 38¾ W.	.06	290
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 51 E.	.84	....	...	803
7. Long. 115° to 120° W.	Spring	0	5	49	20	54	76	145	49	30	0	7	0	8	0	0	0	38	S. 62 38 E.	.65	N. 18 W.	.22	166
	Summer	0	0	0	3	46	76	191	40	11	10	0	0	0	0	0	0	0	S. 50 7 E.	.91	S. 34½ E.	.09	125
	Autumn	0	0	3	3	27	64	104	37	9	6	9	0	0	0	0	0	0	S. 48 36 E.	.86	S. 1 E.	.06	87
	Winter	4	2	12	12	47	152	338	124	23	3	4	0	1	0	0	0	12	S. 49 16 E.	.88	S. 20 E.	.07	245
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 51 57 E.	.82	....	...	623
8. Long. 110° to 115° W.	Spring	0	4	35	20	43	60	137	20	26	4	4	0	14	0	1	3	18	S. 60 1 E.	.69	N. 9½ W.	.17	130
	Summer	0	0	0	0	8	8	86	22	15	9	1	0	2	0	0	0	0	S. 35 57 E.	.88	S. 29 W.	.23	50
	Autumn	0	0	6	0	18	24	159	51	33	4	0	0	0	0	0	0	0	S. 39 43 E.	.90	S. 16 W.	.19	98
	Winter	7	0	11	27	68	308	67	38	4	0	0	0	0	0	0	0	8	S. 68 9 E.	.89	N. 47½ E.	.27½	179
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 50 21 E.	.81	....	...	547
9. Long. 105° to 110° W.	Spring	3	6	17	19	49	24	100	46	49	10	3	3	0	0	2	0	13	S. 49 46 E.	.70	N. 18 W.	.13	115
	Summer	0	0	0	8	22	61	90	42	23	3	0	0	0	0	0	0	0	S. 47 53 E.	.89	S. 11½ E.	.08	83
	Autumn	0	0	9	0	13	21	74	40	16	6	0	0	0	0	0	0	0	S. 42 47 E.	.86	S. 5½ E.	.05	60
	Winter	0	0	5	5	41	28	254	127	52	9	2	0	0	0	0	0	11	S. 39 21 E.	.88	S. 11½ W.	.10	178
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 41 E.	.82	....	...	436
10. Long. 100° to 105° W.	Spring	0	0	6	10	30	56	79	40	14	22	4	0	5	0	2	0	20	S. 46 20 E.	.71	N. 2 E.	.14	96
	Summer	0	0	0	6	12	24	112	56	77	13	0	0	0	0	0	0	0	S. 30 50 E.	.88	S. 25 W.	.14	100
	Autumn	0	0	9	3	7	32	106	34	21	6	2	0	3	0	0	0	6	S. 42 24 E.	.82	N. 62½ E.	.05	76
	Winter	3	1	14	12	48	76	333	153	119	24	8	0	2	0	2	0	5	S. 37 56 E.	.84	S. 13½ E.	.03	267
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 58 E.	.81	....	...	539
11. Long. 95° to 100° W.	Spring	2	3	38	28	62	17	187	69	59	25	29	0	7	3	0	0	23	S. 44 32 E.	.66	N. 24 E.	.20	184
	Summer	0	0	12	0	6	16	201	111	115	15	3	0	9	0	0	0	5	S. 27 49 E.	.85	S. 4½ E.	.11	164
	Autumn	0	9	11	3	23	6	182	111	174	37	4	0	0	0	0	0	3	S. 24 43 E.	.83	S. 20 W.	.11	188
	Winter	9	4	37	5	25	92	270	153	209	34	23	8	11	0	7	7	60	S. 30 20 E.	.70	N. 40 W.	.05	318
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 31 8 E.	.75	....		854
12. Long. 90° to 95° W.	Spring	41	9	70	37	131	140	543	161	422	138	191	43	58	23	26	5	120	S. 21 20 E.	.51	N. 27 W.	.18	719
	Summer	16	12	20	6	28	60	341	325	530	114	101	12	8	0	13	4	100	S. 18 56 E.	.75	S. 12 W.	.08	567
	Autumn	12	6	11	9	57	53	451	240	326	132	24	4	10	2	2	0	43	S. 24 20 E.	.79	S. 37 E.	.11	461
	Winter	21	1	54	19	96	99	456	314	381	127	118	24	37	0	22	7	59	S. 22 39 E.	.68	N. 57 E.	.02	612
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 23 43 E.	.69	....	...	2359

[1] Computed from the resultants for the seasons.

(Nos. 13 to 15.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
13. Long. 85° to 90° W.	Spring	16	7	29	17	102	53	335	219	245	72	50	0	13	3	18	18	38	S. 29° 35′ E.	.47	N. 14° E.	.28	412
	Summer	9	12	18	6	22	33	287	195	470	213	71	15	6	2	0	0	11	S. 10 27 E.	.80	S. 12 W.	.10	457
	Autumn	0	0	0	6	20	41	191	119	414	93	74	1	0	0	0	0	4	S. 10 51 E.	.86	South.	.16	321
	Winter	4	5	20	20	15	16	160	162	219	97	59	22	7	3	3	4	34	S. 10 33 E.	.71	S. 68 W.	.03	283
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 14 46 E.	.76	....	...	1473
14. Long. 80° to 85° W.	Spring	33	32	68	26	57	29	169	96	251	305	378	116	80	15	34	10	84	S. 20 47 W.	.52	N. 7 E.	.17	594
	Summer	3	12	66	27	28	46	265	191	916	597	832	97	101	1	5	0	8	S. 14 10 W.	.71	S. 46½ E.	.05	1065
	Autumn	3	0	0	9	22	15	170	133	394	529	658	166	48	0	9	0	7	S. 21 50 W.	.82	S. 44 W.	.14	721
	Winter	10	0	2	10	15	11	110	46	204	132	158	39	46	6	13	7	29	S. 13 30 W.	.67	N. 8 E.	.05	279
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 17 29 W.	.69	....	...	2659
15. Long. 75° to 80° W.	Spring	8	0	3	0	3	0	14	27	44	75	142	46	54	6	6	0	13	S. 39 5 W.	.73	West.	.11	147
	Summer	3	0	8	1	8	9	46	13	92	124	216	65	47	6	8	0	7	S. 31 52 W.	.75	S. 24 W.	.08	218
	Autumn	6	0	6	3	9	15	65	18	114	108	222	103	50	0	13	0	2	S. 30 31 W.	.72	S. 2½ W.	.06	245
	Winter	13	0	3	3	0	0	17	3	16	21	34	17	0	0	3	0	13	S. 27 3 W.	.49	N. 48 E.	.19	48
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 32 35 W.	.67	....	...	658

[1] Computed from the resultants for the seasons.

(Nos. 16 and 17.) **South America.**

Observed at the following places, viz. :—

Bogota, New Granada, by Pere Cornette, from May 1, 1848, to May 24, 1850.

Cayenne, Guiana, at the Hospital, during the years 1846 to 1852 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
16. Bogota.[1]												
	January	1	23	5	0	0	0	0	0			
	February	1	23	2	0	0	0	0	0			
	March	2	24	3	0	0	0	0	9			
	April	1	19	5	2	0	0	0	0			
	May	1	11	13	1	0	0	0	0			
	June	0	8	18	2	0	0	0	0			
	July	0	4	21	3	0	0	0	0			
	August	0	2	24	4	0	0	0	0			
17. Cayenne.	September	0	4	25	1	0	0	0	0			
	October	1	7	21	1	0	0	0	0			
	November	1	10	17	1	0	0	0	0			
	December	0	20	9	0	0	0	0	0			
	Spring	14	444	91	19	2	1	0	1	72	N. 53° 23′ E.	.81
	Summer	1	124	408	64	3	1	0	0	43	N. 85 48 E.	.84
	Autumn	4	226	396	32	0	0	0	0	9	N. 76 15 E.	.91
	Winter	6	513	65	6	8	0	0	1	41	N. 49 45 E.	.89
	The year	25	1307	960	121	5	2	0	2	165	N. 66 28 E.	.83

[1] The observer gives the prevailing directions of the wind in the different months as follows, viz., January N. W., February N. W., March N. W., April N. W., May N. W. and S. E., June S. E., July S. E., August S. E., September S. E., October N. W., November N. W., December N. W.

(Nos. 18 to 24.) **Atlantic Ocean.**

From observations for an aggregate period of over eight years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
18. Longitude 40° to 55° W.	Spring	6	30	167	48	44	10	24	2	4	0	0	0	0	0	2	3	6	N. 58° 52′ E.	.82	N. ½° W.	.46	116
	Summer	0	1	5	12	24	28	93	25	4	0	2	0	1	0	0	0	9	S. 55 9 E.	.82	S. 5 W.	.46	68
	Autumn	1	0	8	8	12	31	45	0	1	0	1	0	0	0	0	0	0	S. 68 43 E.	.81	S. 9½ E.	.26	36
	Winter	6	7	38	20	28	14	11	4	1	0	0	0	1	0	1	0	1	N. 73 48 E.	.74	N. ½ W.	.26	46
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 33 E.	.71	....	...	266
19. Longitude 35° to 40° W.	Spring	7	43	179	67	50	14	74	15	2	4	2	2	0	0	5	2	36	N. 86 47 E.	.57	N. 30½ W.	.18	167
	Summer	0	5	14	7	22	20	121	56	11	1	2	0	1	0	0	2	2	S. 49 33 E.	.80	S. 7 W.	.40	88
	Autumn	0	0	15	6	25	30	65	6	6	0	1	0	1	0	0	0	3	S. 63 48 E.	.81	S. 16 E.	.25	53
	Winter	6	13	60	26	51	22	46	3	6	0	1	0	0	0	0	0	2	N. 83 31 E.	.76	N. 25½ E.	.23	79
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 79 44 E.	.67	....	...	387
20. Longitude 30° to 35° W.	Spring	55	140	42	51	14	57	5	11	3	3	1	4	2	7	2	12	31	N. 41 58 E.	.63	N. 23 W.	.54	147
	Summer	1	4	2	25	6	64	40	21	6	2	2	0	2	1	1	0	5	S. 62 1 E.	.70	S. 4 W.	.30	61
	Autumn	7	14	10	22	27	141	58	21	3	3	0	1	0	0	0	2	2	S. 71 18 E.	.81	S. 30 E.	.26	107
	Winter	5	36	23	42	26	81	36	7	0	1	0	0	0	1	3	6	6	N. 86 47 E.	.69	N. 38½ E.	.08	91
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 31 E.	.64	....	...	496
21. Longitude 25° to 30° W.	Spring	23	85	27	50	15	60	28	14	6	2	1	2	1	2	7	25	25	N. 56 9 E.	.46	N. 19 W.	.48	124
	Summer	0	8	6	25	11	74	63	51	10	5	0	3	2	3	0	1	1	S. 55 33 E.	.75	S. 18 E.	.25	88
	Autumn	1	4	5	18	28	77	120	79	21	9	1	2	0	1	1	2	14	S. 48 41 E.	.79	S. 10 E.	.33	128
	Winter	5	41	20	25	30	83	50	36	2	7	0	4	1	1	3	11	28	S. 80 53 E.	.57	N. 14 E.	.10	116
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 70 20 E.	.57	....	...	456
22. Longitude 20° to 25° W.	Spring	18	45	17	37	21	53	65	54	16	25	2	8	2	9	6	20	42	S. 73 17 E.	.38	N. 20 W.	.36	147
	Summer	3	2	6	7	14	99	182	174	27	28	3	1	1	7	0	0	8	S. 38 34 E.	.83	S. 20 E.	.26	187
	Autumn	2	5	2	17	1	72	92	129	36	26	3	13	1	3	1	1	13	S. 33 19 E.	.99	S. 8 E.	.37	106
	Winter	13	40	26	36	29	63	82	67	17	11	9	3	0	8	0	10	50	S. 68 28 E.	.49	N. 7 W.	.28	155
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 48 E.	.64	....	...	595
23. Longitude 10° to 20° W.	Spring	8	14	4	15	11	16	20	24	26	33	15	21	1	12	3	16	6	S. 7 0 E.	.27	N. 23 W.	.27	82
	Summer	0	0	0	17	11	64	147	461	340	158	28	37	6	7	0	1	3	S. 12 39 E.	.83	S. 7½ E.	.29	428
	Autumn	1	3	1	7	1	37	71	255	204	148	29	12	5	0	0	0	8	S. 15 6 E.	.71	S. 15 E.	.17	364
	Winter	7	13	15	23	4	14	28	41	27	30	11	13	0	9	2	6	35	S. 29 22 E.	.34	N. 6½ E.	.23	93
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 15 18 E.	.54	....	...	867
24. Longitude 10° to 55° W.	January	11	49	57	54	73	84	71	40	31	19	6	7	1	6	4	12	31	S. 81 46 E.	.53	N. 15 E.	.16	185
	February	17	67	87	75	47	88	63	45	8	13	5	11	0	7	2	12	32	N. 83 31 E.	.54	N. 11 E.	.34	193
	March	38	106	139	94	38	70	47	31	20	20	9	7	1	15	7	21	40	N. 63 13 E.	.52	North.	.51	235
	April	58	191	183	84	45	72	56	33	12	20	2	19	1	3	11	37	52	N 52 18 E.	.56	N. 3 W.	.62	293
	May	21	60	114	90	72	68	113	56	25	27	10	11	4	12	5	20	56	S. 89 59 E.	.48	N. 2 E.	.27	255
	June	4	10	25	50	37	133	154	127	50	30	7	16	2	11	1	2	16	S. 47 45 E.	.69	S. 11 E.	.19	225
	July	0	8	6	27	31	120	216	218	69	54	1	6	2	1	1	0	8	S. 37 17 E.	.82	S. 2 E.	.48	256
	August	0	2	2	16	20	96	276	443	279	111	29	19	9	6	0	2	4	S. 20 52 E.	.84	S. 20 W.	.54	438
	September	4	1	5	12	48	88	141	273	171	138	26	14	5	1	0	2	6	S. 20 15 E.	.79	S. 24 W.	.51	312
	October	4	14	17	25	18	112	145	130	76	46	8	10	2	3	2	1	8	S. 38 0 E.	.72	S. 7 W.	.29	207
	November	4	10	19	41	38	189	165	97	18	2	1	4	0	0	0	2	26	S. 58 28 E.	.80	S. 55 E.	.25	205
	December	14	34	41	44	53	105	119	73	14	17	10	2	1	6	4	8	59	S. 68 23 E.	.56	N. 32 E.	.08	201
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 2 E.	.55	....	...	3005

[1] Computed from the resultants for the seasons.

(No. 25.) **Cape Palmas, Liberia, Africa.**

Observed from December 4, 1839, to January 31, 1840, as follows, viz.:—

December, South 30, S. S. W. 9, S. W. 24, W. S. W. 9, Calm 12.

Direction of resultant S. 26° 37′ W. (? ?)

Ratio of resultant to sum of winds .80.

January, N. E. 18, S. E. 3, South 9, S. W. 33, West 15, N. W. 6, Calm 9.

Direction of resultant S. 55° 43′ W. (? ?)

Ratio of resultant to sum of winds .36

(No. 25*a*.) **Central Africa.**

Gondokoro and vicinity, latitude 4° 55′ north, longitude 30° 48′ east.

Observed by Lady Baker, from August 1, 1871, to July 7, 1873, during tours extending from 0° to 5° north latitude, and 31° to 33° east longitude.

In reference to the part of Lake Albert N'Yanza, lying between 1 and 2 degrees north latitude, Sir Samuel Baker says (1864): "The lake was calm every day till 1 P. M., when a southwest gale arose, and compelled the canoes to be hauled ashore."

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.			Direction.	Force.
25(*a*). Gondokoro and vicinity.	January	13	2	12	2	4	0	2	6	20				
	February	13	0	13	4	4	0	1	7	14				
	March	6	3	12	7	1	1	0	6	20				
	April	1	1	15	9	14	5	1	1	3				
	May	1	3	0	5	27	8	5	1	6				
	June	0	1	0	0	3	1	2	0	0				
	July	...	...	...	...	...	...	...	...	...				
	August	22	4	1	0	3	3	1	0	12				
	September	17	1	2	4	4	1	3	6	7				
	October	15	0	6	4	7	2	2	2	16				
	November	6	3	15	7	16	0	1	0	8				
	December	10	1	3	15	7	3	3	0	20				
	Spring	8	8	27	21	42	14	6	8	39	S. 28° 41′ E.	.31	S. 7° E.	.32
	Summer	22	5	1	0	6	4	3	0	12	N. 4 25 W.	.31½	N. 26 W.	.30
	Autumn	38	4	23	15	27	3	6	8	31	N. 73 23 E.	.15	S. 88 E.	.04
	Winter	36	4	28	21	15	3	6	13	54	N. 60 30 E.	.18	N. 48 E.	.07
	The year[1]	...	...	...	...	...	...	...	...	...	N. 67 58 E.	.11½		

[1] Computed from the resultants for the seasons.

(No. 26.) **Speke's Station** (near the source of the Nile), **Africa.**

Observations for 12 months in the years 1861 and 1862 show the following prevailing directions of the winds in the different months of the year, viz.: January and February N. E., March E. by N., April variable, May E. by S., June, July and August S. E., September and October variable, November and December N. E.

(Nos. 27 to 32.) **Indian Ocean.**

From observations for an aggregate period of over 8½ years, collected and classified from the logs of numerous sailing vessels at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
27. Longitude 40° to 50° E.	Spring	1	2	1	1	5	21	15	7	1	2	5	0	0	0	0	0	0	S. 51° 16′ E.	.76	S. 30½° E.	.36	20
	Summer	0	0	0	0	0	0	3	6	8	22	40	18	0	0	0	0	0	S. 34 18 W.	.90	S. 60½ W.	.91	33
	Autumn	10	26	22	21	21	12	23	16	59	11	12	2	3	0	2	0	18	S. 55 41 E.	.38	N. 20½ E.	.08	86
	Winter	9	0	93	37	18	12	28	6	4	0	0	0	0	0	0	0	0	N. 70 3 E.	.76	N. 38° E.	.70	69
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 14 E.	.41	....	...	208
28. Longitude 50° to 60° E.	Spring	14	17	11	5	7	1	10	0	15	10	21	7	4	2	4	9	4	N. 58 0 W.	.03	North.	.14	47
	Summer	0	0	0	0	0	0	14	12	36	50	80	16	11	3	0	0	1	S. 28 37 W.	.84	S. 32 W.	.71½	75
	Autumn	40	2	42	2	16	8	34	11	70	42	145	18	85	5	55	1	38	S. 51 35 W.	.37	S. 69 W.	.28	205
	Winter	4	19	56	17	12	5	6	0	2	2	0	0	0	0	0	2	9	N. 54 14 E.	.75	N. 48 E.	.85	45
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 11 39 W.	.13	....	...	372

[1] Computed from the resultants for the seasons.

(Nos. 29 to 32.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
29. Longitude 60° to 80° E.	Spring	12	24	35	7	9	4	14	5	12	19	47	35	30	27	25	19	4	N. 79° 31′ W.	.29	S. 49° W.	.05	110
	Summer	2	5	11	4	8	4	25	24	52	71	83	49	46	64	25	8	21	S. 50 12 W.	.53	S. 21 W.	.46	168
	Autumn	10	5	10	3	1	1	2	2	6	13	43	12	25	12	31	15	0	N. 86 39 W.	.60	S. 81½ W.	.38	64
	Winter	3	21	63	13	8	5	1	0	3	0	0	5	7	11	1	15	3	N. 30 54 E.	.61	N. 51 E.	.72	33
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 69 12 W.	.26	....	...	395
30. Longitude 80° to 90° E.	Spring	41	28	49	33	30	30	62	33	41	48	99	84	72	45	48	25	48	S. 57 28 W.	.19	S. 87 E.	.09	272
	Summer	0	0	0	0	0	3	7	20	28	47	93	77	33	24	12	5	8	S. 50 34 W.	.75	S. 43 W.	.48	119
	Autumn	35	13	11	11	19	12	18	25	36	56	133	104	102	68	41	11	27	S. 67 35 W.	.50	S. 73 W.	.22	241
	Winter	111	203	178	110	75	37	44	10	20	23	40	52	44	28	56	41	35	N. 30 24 E.	.43	N. 44 E.	.66	369
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 6 W.	.28	....	...	1007
31. Longitude 90° to 95° E.	Spring	6	11	11	1	10	8	22	25	40	53	64	68	27	28	26	15	26	S. 47 56 W.	.46	S. 21 W.	.16	147
	Summer	7	5	1	5	2	1	10	17	45	73	172	101	34	11	27	3	33	S. 47 58 W.	.46	S. 21½ W.	.17	183
	Autumn	10	6	2	10	6	10	19	16	15	42	94	51	48	30	24	8	17	S. 57 3 W.	.52	S. 49 W.	.20	136
	Winter	38	38	52	26	21	6	10	5	6	13	31	11	35	19	47	17	34	N. 0 54 W.	.29	N. 32 E.	.52	137
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 13 W.	.32	....	...	603
32. Longitude 95° to 105° E.	Spring	20	18	45	20	15	18	52	27	21	31	51	19	26	19	37	23	51	S 14 28 W.	.06½	N. 76 W.	.06	165
	Summer	8	18	10	7	25	19	88	53	49	25	39	21	26	15	36	6	13	S. 7 55 E.	.34	S. 1½ W.	.26	153
	Autumn	14	15	22	2	12	7	22	26	15	16	19	2	10	7	23	7	23	S. 31 56 E.	.08	N. 24 W.	.01	81
	Winter	40	45	65	19	41	5	41	4	19	16	37	16	18	10	34	25	46	N. 29 57 E.	.21	N. 13 E.	.26	161
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 31 6 E.	.09	....	...	560

[1] Computed from the resultants for the seasons.

(No. 33.) **Singapore.***

Computed from observations made during the months of June and July, 1843, as follows :— North 2, N. E. 12, East 2, S. E. 54, South 37, S. W. 76, West 9, N. W. 29, Calm 1.
Direction of resultant S. 19° 27′ W. (?)
Ratio of resultant to sum of winds .47.

(Nos. 34 to 41.) **China Sea, Celebes Sea and Pacific Ocean.**

From observations for an aggregate period of nearly seven years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N W.	N. N. W.	Calm or var.			
34. China Sea, longitude 105° to 110° E.	Spring	57	41	142	33	61	39	67	13	89	37	54	13	27	3	31	3	38	S. 87° 50′ E.	.24	249
	Summer	3	1	6	1	15	22	78	63	101	98	110	4	18	10	19	7	23	S. 4 38 W.	.62	193
	Autumn	56	56	61	17	50	17	70	43	194	93	144	30	106	22	73	15	45	S. 27 55 W.	.27	364
	Winter	121	161	163	32	20	1	6	1	6	1	4	3	10	16	26	17	2	N. 22 45 E.	.77	197
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 76 24 E.	.09	1003
35. Celebes Sea, longitude 110° to 120° E.	Summer	6	0	17	0	8	2	2	12	37	40	46	8	6	4	6	0	1	S. 22 39 W.	.55	65
36. Celebes Sea, longitude 110° to 130° E.	Spring	23	7	15	12	18	5	12	1	6	9	14	2	11	4	6	6	3	N. 44 33 E.	.18	51
	Autumn	15	1	11	25	7	13	12	7	21	10	26	6	10	0	3	2	12	S. 31 44 E.	.22	60
	Winter	109	16	83	7	22	2	15	6	14	4	17	15	23	11	43	56	7	N. 6 4 W.	.49	150
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 16 38 W.	.02	979

[1] Computed from the resultants for the seasons.

* Observations made at Raffle's Light show the following prevailing directions of the wind for the several months of the year, viz. : January N. E., February N. E., March N. E., April N. N. E., May S. S. W., June S., July S. S. W., August S. S. W., September S. W., October W. S. W., November N., December N. E.

(Nos. 37 to 41.) **Celebes Sea and Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
37. Celebes Sea, longitude 120° to 125° E.	Summer	10	0	15	8	29	6	40	17	85	32	80	25	27	11	10	1	6	S. 14° 24′ W.	.49	134
38. Pacific Ocean, longitude 130° to 135° E.	Winter	118	50	85	23	17	6	12	2	8	5	16	18	48	19	119	34	9	N. 10 54 W.	.54	196
39. Pacific Ocean, longitude 125° to 140° E.	Summer	1	3	8	2	19	7	35	10	35	18	32	3	10	1	6	0	12	S. 8 59 E.	.49	67
40. Pacific Ocean, longitude 130° to 150° E.	Spring	80	34	52	8	14	5	9	1	10	1	8	7	15	9	31	47	13	N. 2 4 E.	.56	115
	Autumn	12	3	12	3	18	0	0	0	0	0	3	0	0	0	10	4	0	N. 30 49 E.	.59	22
41. Pacific Ocean, longitude 135° to 150° E.	Winter	36	2	25	2	39	0	1	0	2	0	1	0	2	2	16	17	13	N. 24 25 E.	.56	53

Addendum to Zone 18.

Observations on the Indian Ocean, calculated at the Meteorological Institute of the Netherlands, under Capt. Cornelissen's direction.

	Time of the year.	Between N. and E.	Between E. and S.	Between S. and W.	Between N. and W.	Calm or variable.
Between 80° and 90° E.	Spring	21	18	31	24	8
	Summer	0	20	60	18	2
	Autumn	9	12	47	30	2
	Winter	51	11	15	21	2
Between 90° and 100° E.	Spring	14	17	37	22	10
	Summer	6	18	53	15	8
	Autumn	10	17	39	27	6
	Winter	28	11	17	33	11

SOUTHERN HEMISPHERE.

ZONES 19 TO 36.

NOTE.—In classifying the winds of the Southern Hemisphere the months of March, April and May have been designated *Spring;* June, July and August, *Summer;* September, October and November, *Autumn;* and December, January and February, *Winter.* On the maps the same notation and order have been preserved; the first season, Spring, being marked I; Summer, S; Autumn, A; and Winter, W.

ZONE No. 19.

LATITUDE 0° TO 5° SOUTH.

The data for the study of the winds of this zone consist of observations made at 4 regular stations on land, for an aggregate period of 24 years 7 months; at sea for about 73 years 3 months. The distribution is as follows:—

Where observed.	No. Stations.	Aggregate length of time.
Pacific Ocean,	....	nearly 36 years.
Atlantic Ocean,	....	over 26 years.
East Indies,	4	24 years 7 months.
Indian Ocean,	....	11 years 3 months.

(Nos. 1 to 19.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of nearly 31 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Longitude 175° W. to 180°.	Spring	7	23	69	36	35	9	4	3	9	3	7	0	2	1	0	6	3	N. 60° 46′ E.	.67	N. 22½° E.	.24	73
	Summer	13	7	59	31	136	23	80	4	11	3	0	0	6	5	0	0	7	S. 88 22 E.	.72	S. 64½ E.	.21	129
	Autumn	7	5	17	5	31	11	65	27	22	0	4	7	1	0	0	0	22	S. 53 54 E.	.59	S. 7 W.	.41	75
	Winter	90	52	74	62	61	15	90	4	10	4	10	0	18	14	51	20	37	N. 45 57 E.	.43	N. 43 W.	.31	204
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 57 E.	.53	....	...	481
2. Longitude 170° to 175° W.	Spring	16	23	60	68	59	12	20	4	3	0	0	1	1	0	1	0	0	N. 67 45 E.	.79	N. 10 E.	.33	90
	Summer	0	0	0	32	88	80	118	34	20	0	0	0	0	0	0	0	0	S. 62 1 E.	.88	S. 15 E.	.39	124
	Autumn	6	8	30	40	157	52	111	49	28	13	0	0	5	0	5	0	17	S. 69 36 E.	.71	S. 2 W.	.21	174
	Winter	70	27	96	86	177	49	54	8	6	4	7	3	25	6	23	32	40	N. 66 44 E.	.56	N. 31 W.	.30	234
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 59 E.	.67	....	...	622

[1] Computed from the resultants for the seasons.

(Nos. 3 to 15.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
3. Longitude 165° to 170° W.	Spring	34	4	69	50	77	8	29	2	10	0	4	0	1	9	0	6	0	N. 67° 52′ E.	.67	N. 13° W.	.38	101
	Summer	0	7	30	18	139	73	116	48	41	0	2	0	4	0	0	0	3	S. 64 38 E.	.80	S. 4 E.	.22	161
	Autumn	6	3	13	19	79	59	120	24	19	0	0	0	0	0	0	5	8	S. 61 12 E.	.85	S. 6 E.	.30	285
	Winter	4	3	32	34	90	35	36	6	3	0	0	0	0	1	3	6	4	N. 89 8 E.	.76	N. 20 E.	.14	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 23 E.	.77	....	...	633
4. Longitude 160° to 165° W.	Spring	49	49	169	59	111	24	28	2	6	2	4	2	7	3	7	4	30	N. 57 55 E.	.69	N. 24½ W.	.36	185
	Summer	19	7	38	63	149	99	58	29	7	0	0	0	0	0	0	0	3	S. 84 32 E.	.81	S. 29 E.	.15	157
	Autumn	1	2	29	62	146	124	121	35	7	3	3	0	0	0	0	0	6	S. 73 22 E.	.84	S. 14½ E.	.28	180
	Winter	19	29	96	107	210	80	67	14	3	0	0	0	2	0	16	3	17	N. 81 29 E.	.76	N. 9½ E.	.09	221
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 50 E.	.74	....	...	743
5. Longitude 155° to 160° W.	Spring	14	18	137	107	140	43	86	6	6	0	0	0	12	0	12	6	19	N. 77 28 E.	.71	N. 36½ W.	.22	202
	Summer	1	3	6	36	109	84	82	9	9	0	0	0	0	0	0	0	2	S. 73 23 E.	.88	S. 18½ E.	.21	114
	Autumn	14	3	90	75	190	164	126	35	35	0	0	0	0	0	0	0	4	S. 79 15 E.	.80	S. 3½ E.	.11	245
	Winter	9	20	125	97	290	112	76	8	8	6	0	0	2	0	4	8	9	N. 85 49 E.	.81	N. 15½ E.	.11	258
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 36 E.	.78	....	...	819
6. Longitude 150° to 155° W.	Spring	13	14	70	62	107	29	30	0	1	0	0	3	5	3	8	3	11	N. 71 30 E.	.74	N. 24 W.	.25	126
	Summer	0	7	11	12	33	23	22	3	0	0	0	0	0	0	0	0	0	S. 84 51 E.?	.84	S. 22½ E.	.09	37
	Autumn	3	1	23	80	135	79	90	16	7	0	0	0	0	0	0	0	7	S. 80 1 E.	.85	S. 12 E.	:16	147
	Winter	5	12	112	90	288	91	81	28	1	0	0	1	1	0	8	2	6	N. 88 16 E.	.83	N. 5½ E.	.04	242
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 21 E.	.80	....	...	552
7. Longitude 140° to 150° W.	Spring	0	7	21	38	100	53	16	3	3	0	0	0	0	0	0	0	3	S. 0 24 E.	.88	N. 7½ E.	.09	81
	Summer	0	0	4	8	26	4	12	0	0	0	0	0	0	0	0	0	0	S. 85 9 E.??	.90	N. 62 E.	.03	18
	Autumn	3	0	0	1	11	6	9	0	0	0	0	0	0	0	0	0	0	S. 77 39 E.??	.81	S. 42 W.	.11	10
	Winter	0	8	28	45	261	96	77	0	0	0	0	0	0	0	0	0	0	S. 84 17 E.	.91	S. 84 39 E.	.03	172
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 16 E.	.87	....	...	281
8. Longitude 135° to 140° W.	Spring	0	3	6	25	82	52	27	9	0	0	0	0	0	0	0	0	1	S. 80 25 E.	.90	N. 71 E.	.18	68
	Summer	0	0	2	3	41	16	28	45	0	0	0	0	19	0	0	0	0	S. 50 10 E.	.66	S. 46 W.	.31	51
	Autumn	3	0	0	29	77	78	9	0	0	0	0	0	0	0	0	0	42	N. 85 36 E.	.77	N. 11½ E.	.27	79
	Winter	0	0	3	32	171	96	155	43	0	0	0	0	0	0	0	0	6	S. 67 37 E.	.89	S. 34 E.	.17	166
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 74 3 E.	.76	....	...	364
9. Longitude 130° to 135° W.	Spring	0	0	5	44	225	131	143	20	0	0	0	0	5	0	0	0	12	S. 73 35 E.	.88	N. 60 E.	.16	195
	Summer	0	0	0	3	11	17	120	18	34	0	0	0	0	0	0	0	0	S. 43 4 E.	.92	S. 13 W.	.35	65
	Autumn	0	0	0	15	46	54	19	0	0	0	0	0	0	0	0	0	124	S. 77 2 E.	.49	N. 45½ W.	.32	86
	Winter	0	0	11	34	208	154	139	9	5	0	0	0	0	0	0	0	0	S. 73 4 E.	.91	N. 67 E.	.18	187
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 65 11 E.	.78	....	...	533
10. Longitude 125° to 130° W.	Spring	1	3	7	24	109	63	116	68	0	0	0	0	3	0	0	0	9	S. 63 20 E.	.83	N. 24 W.	.07	134
	Summer	0	0	0	0	13	45	46	9	0	0	1	0	0	0	0	0	6	S. 56 47 E.?	.94	S. 5 E.	.09	38
	Autumn	0	0	0	0	18	57	20	10	0	0	0	0	0	0	0	0	0	S. 63 0 E.?	.95	S. 88 E.	.06	35
	Winter	5	3	9	30	98	176	238	19	19	0	2	0	0	0	0	0	19	S. 62 15 E.	.86	N. 20 W.	.03½	206
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 16 E.	.89	....	...	413
11. Longitude 120° to 125° W.	Spring	0	5	54	7	82	70	156	38	15	0	0	0	0	0	2	0	32	S. 58 2 E.	.80	N. 83° W.	.09	137
	Summer	0	0	1	24	75	133	160	37	0	0	0	0	0	0	0	0	0	S. 61 34 E.	.92	S. 75 E.	.04	103
	Autumn	0	1	2	3	57	116	16	15	0	0	0	0	0	0	0	0	0	S. 70 27 E.	.94	N. 45 E.	.17	70
	Winter	0	0	0	4	116	221	326	145	56	0	0	0	0	0	0	0	13	S. 50 55 E.	.89	S. 30 W.	.14	294
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 26 E.	.88	....	...	644
12. Longitude 115° to 120° W.	Spring	0	0	13	3	27	30	130	15	0	0	3	0	0	0	0	0	6	S. 56 5 E.	.86	....	...	76
	Summer	0	0	0	0	49	63	220	15	0	0	0	0	0	0	0	0	0	S. 54 13 E.	.95	....	...	116
	Winter	0	0	0	0	51	144	346	57	33	0	0	0	0	0	0	0	3	S. 49 27 E.	.93	....	...	211
13. Longitude 110° to 115° W.	Spring	0	0	24	10	27	56	171	35	0	0	3	0	0	0	0	0	4	S. 56 40 E.	.86	N. 7½ E.	.14	110
	Summer	0	0	0	0	60	82	132	68	3	0	0	0	0	0	0	0	5	S. 53 18 E.	.91	N. 21½ E.	.06	117
	Autumn	0	0	0	0	0	36	95	46	0	0	0	0	0	0	0	0	0	S. 43 43 E.	.96	S. 22½ W.	.09	59
	Winter	0	0	6	2	22	124	332	62	41	0	0	0	0	0	0	0	9	S. 47 15 L.	.95	S. 23 E.	.03	199
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 0 E.	.93	....	...	485
14. Longitude 105° to 110° W.	Spring	10	0	21	19	24	35	181	60	24	35	5	6	0	0	2	0	7	S. 43 42 E.	.73	....	...	143
	Summer	3	3	2	0	35	63	285	68	20	3	0	3	0	0	0	0	0	S. 46 18 E.	.91	....	...	162
	Winter	0	0	12	0	17	164	314	42	14	0	0	0	0	0	0	0	0	S. 51 36 E.	.94	....	...	188
15. Longitude 100° to 105° W.	Spring	3	0	0	9	21	49	292	89	11	17	2	0	4	0	3	0	0	S. 42 38 E.	.88	N. 70 W.	.06	167
	Summer	0	0	0	0	4	89	239	68	0	0	0	0	0	0	0	0	0	S. 47 43 E.	.95	N. 64 E.	.06	133
	Autumn	0	0	0	0	9	69	280	80	12	0	0	0	0	0	0	0	0	S. 44 10 E.	.96	S. 47 22 E.	.03	150
	Winter	0	0	0	0	6	56	349	97	21	0	0	0	0	0	2	0	0	S. 41 49 E.	.96	S. 19 W.	.05	177
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 6 E.	.94	....	...	627

[1] Computed from the resultants for the seasons.

(Nos. 16 to 19.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
16. Longitude 95° to 100° W.	Spring	3	0	4	0	11	33	142	46	2	10	0	17	3	0	0	0	0	S. 39° 47′ E.	.81	N. 52′ W.	.07	90
	Summer	0	0	0	0	7	12	121	17	10	0	0	0	0	0	0	0	0	S. 43 21 E.	.79	N. 19 W.	.10	59
	Autumn	0	0	0	0	4	8	150	34	15	0	0	0	0	0	0	0	0	S. 40 0 E.	.96	S. 33 E.	.08	70
	Winter	0	0	0	0	18	31	151	89	24	0	0	0	0	0	0	0	0	S. 39 49 E.	.93	S. 22½ E.	.05	104
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 40 54 E.	.88	....	...	323
17. Longitude 90° to 95° W.	Spring	8	0	31	31	66	57	485	88	122	20	36	4	30	9	5	3	0	S. 39 40 E.	.73	N. 32½ W.	.12	332
	Summer	0	0	0	9	3	49	201	93	51	7	0	0	0	0	0	0	0	S. 37 36 E.	.92	S. 28 E.	.06½	138
	Autumn	0	0	0	0	12	34	265	84	56	3	0	0	0	0	0	0	0	S. 37 52 E.	.94	S. 33 E.	.09	151
	Winter	10	0	22	0	84	82	459	179	122	30	29	4	6	0	0	0	0	S. 38 32 E.	.83	N. 35 W.	.03	342
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 23 E.	.85½	....	...	963
18. Longitude 85° to 90° W.	Spring	10	0	6	33	39	43	362	71	24	18	23	12	15	6	8	3	19	S. 42 47 E.	.71	N. 11½ W.	.15	231
	Summer	0	0	0	0	2	41	165	129	29	21	3	0	0	0	0	0	5	S. 32 57 E.	.91	S. 10 W.	.10	132
	Autumn	0	0	0	0	0	12	293	142	87	3	3	0	0	0	0	0	0	S. 31 46 E.	.95	S. 4 W.	.14	180
	Winter	3	0	14	12	41	32	380	85	26	15	6	0	0	0	6	3	24	S. 44 57 E.	.83	N. 42½ E.	.11	216
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 37 37 E.	.84	....	...	759
19. Longitude 80° to 85° W.	Spring	0	0	5	8	28	83	613	197	106	60	39	16	4	9	5	3	25	S. 33 17 E.	.82	N. 68 E.	.16	400
	Summer	0	0	0	0	0	39	173	262	152	109	27	27	3	6	8	0	12	S. 13 39 E.	.82	S. 67½ W.	.13	273
	Autumn	0	0	3	0	9	25	325	119	152	83	84	13	0	4	12	0	0	S. 17 8 E.	.79	S. 83½ W.	.08	276
	Winter	3	0	5	0	12	28	237	116	145	19	32	6	10	0	0	0	14	S. 24 2 E.	.81	N. 66½ E.	.02	209
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 22 57 E.	.81	....	...	1158

[1] Computed from the resultants for the seasons.

(Nos. 20 to 33.) **Atlantic Ocean.**

From observations for an aggregate period of over 14 years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
20. Longitude 35° to 45° W.	Spring	29	22	79	57	152	136	331	136	63	5	3	1	2	0	2	4	31	S. 62° 28′ E.	.72	N. 25° W.	.13	351
	Summer	0	0	6	16	37	41	213	73	38	2	4	0	0	0	0	0	0	S. 47 45 E.	.85	S. 30 W.	.14	143
	Autumn	0	0	17	8	49	71	152	10	13	0	1	0	0	0	0	0	0	S. 59 45 E.	.89	S. 88½ E.	.07	107
	Winter	0	1	13	33	94	84	197	36	10	0	0	0	0	0	0	0	0	S. 62 21 E.	.88	N. 60½ E.	.09	156
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 57 15 E.	.83	....	...	757
21. Lat. 1° to 3° S., long. 36° to 39° W.	Spring	0	9	28	34	54	54	121	38	5	0	0	0	0	0	0	0	6	S. 67 52 E.	.80	N. 6½ W.	.11	116
	Summer	0	0	0	14	14	34	98	50	2	1	3	0	0	0	0	0	0	S. 48 24 E.	.89	S. 22½ W.	.20	72
	Autumn	0	0	4	17	20	48	62	12	0	0	0	0	0	0	0	0	0	S. 64 52 E.	.88	N. 45 E.	.06	54
	Winter	0	0	6	11	36	67	65	11	1	0	0	0	0	0	0	0	0	S. 65 26 E.	.91	N. 60 E.	.09	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 20 E.	.86	....	...	308
22. Lat. 3° to 5° S., long. 36° to 39° W.	Spring	0	8	7	3	15	23	45	8	9	0	0	0	0	0	0	0	3	S. 62 28 E.	.77	....	...	40
23. Lat. 3° to 5° S., long. 35° to 39° W.	Spring[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 50 E.	.80	N. 49½ W.	.07	97
	Summer	0	0	0	10	1	24	117	48	6	3	6	0	0	0	0	0	0	S. 41 11 E.	.91	S. 32 W.	.24	72
	Autumn	0	0	2	19	22	55	64	13	0	0	0	0	0	0	0	0	0	S. 63 53 E.	.91	N. 49½ E.	.12	58
	Winter	0	0	0	11	33	62	56	15	0	0	0	0	0	0	0	0	0	S. 63 24 E.	.92	N. 54½ E.	.12	59
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 22 E.	.87	....	...	286
24. Lat. 3° to 5° S., long. 35° to 36° W.	Spring	0	4	2	8	22	28	59	26	19	0	0	0	0	0	0	0	3	S. 51 32 E.	.82	N. 21 W.	.09	57
25. Lat. 1° to 3° S., long. 32° to 36° W.	Spring	0	0	5	5	52	25	128	49	13	2	0	0	0	0	0	0	12	S. 51 13 E.	.85	N. 9½ W.	.06	97
	Summer	0	0	0	3	4	31	65	46	5	2	3	0	0	0	0	0	0	S. 41 37 E.	.91	S. 40 W.	.11	53
	Autumn	0	0	2	1	10	16	55	15	0	0	0	0	0	0	0	0	1	S. 51 29 E.?	.92	N. 63 E.	.05	33
	Winter	0	0	0	3	27	5	128	19	3	0	0	0	0	0	0	0	0	S. 49 46 E.	.94	S. 77½ E.	.04½	62
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 30 E.	.90	....	...	245

[1] Computed from the resultants for the seasons. [2] Nos. 22 and 24 combined.

(Nos. 26 to 33.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
26. Lat. 3° to 5° S., long. 32° to 35° W.	Spring	0	3	6	6	32	34	105	32	14	0	0	0	0	0	0	0	0	S. 52° 54′ E.	.84	N. 30° W.	.03	75
	Summer	1	0	0	9	4	27	41	26	4	0	4	0	0	0	0	0	0	S. 47 43 E.?	.85	S. 58 W.	.07	39
	Autumn	0	0	2	6	13	36	44	28	0	0	0	0	0	0	0	0	0	S. 54 50 E.?	.90	N. 75 E.	.04	43
	Winter	1	0	3	12	16	17	88	19	5	0	0	0	0	0	0	0	0	S. 53 51 E.	.88	N. 52 E.	.03	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 16 E.	.87	....	...	211
27. Lat. 0° to 5° S., long. 30° to 35° W.	Spring	26	19	35	30	96	149	417	76	33	6	4	0	2	1	5	9	35	S. 58 22 E.	.76	N. 5½ W.	.18	311
	Summer	2	0	0	9	41	61	262	55	19	5	2	2	2	0	1	1	0	S. 47 57 E.	.90	S. 6½ E.	.03	153
	Autumn	0	0	9	3	32	85	359	65	22	0	0	0	0	0	0	0	0	S. 47 49 E.	.94	S. 24 E.	.07	92
	Winter	3	0	13	12	70	83	540	88	52	5	0	0	1	0	0	0	6	S. 47 21 E.	.91	S. 6 E.	.04	291
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 50 1 E.	.87	....	...	947
28. Lat. 1° to 3° S., long. 29° to 32° W.	Spring	0	0	0	0	6	12	59	36	12	1	0	0	0	0	1	1	7	S. 39 10 E.?	.83	N. 2 E.	.09	46
	Summer	0	0	0	0	6	29	66	62	11	0	0	0	0	0	0	0	0	S. 39 19 E.	.94	N. 89½ E.	.07	58
	Autumn	0	0	0	6	7	18	96	111	38	6	1	0	0	0	0	0	1	S. 31 38 E.	.91	S. 46½ W.	.07	95
	Winter	0	0	0	0	6	16	145	136	30	4	3	0	0	0	0	0	1	S. 31 57 E.	.94	S. 23½ W.	.07	114
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 35 38 E.	.90	....	...	313
29. Lat. 3° to 5° S., long. 29° to 32° W.	Spring	4	1	0	2	5	21	98	34	6	0	0	0	1	1	1	0	11	S. 44 7 E.	.82	N. 33½ W.	.10	62
	Summer	0	0	0	0	6	26	92	50	2	0	0	0	0	0	0	0	0	S. 43 15 E.	.97	S. 50½ E.	.05	59
	Autumn	0	0	0	3	12	35	116	115	9	0	0	0	1	0	0	0	0	S. 39 24 E.	.93	S. 38½ W.	.05½	97
	Winter	0	0	0	6	7	43	207	71	3	0	0	0	0	0	0	0	1	S. 44 35 E.	.95	S. 86 E.	.04	113
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 56 E.	.92	....	...	331
30. Lat. 0° to 5° S., long. 25° to 30° W.	Spring	21	12	38	33	71	77	676	159	74	15	15	10	4	1	4	7	51	S. 46 16 E.	.77	N. 18 W.	.14	423
	Summer	2	0	8	14	51	81	676	234	67	14	5	1	1	0	1	0	0	S. 41 31 E.	.92	S. 26 E.	.02	384
	Autumn	0	0	0	1	2	66	782	234	76	16	17	1	0	0	0	0	0	S. 38 16 E.	.94	S. 16 W.	.07	405
	Winter	6	5	17	6	37	43	851	372	95	19	12	3	6	0	6	5	11	S. 37 37 E.	.89	S. 49½ W.	.07	498
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 55 E.	.90	....	...	1710
31. Lat. 0° to 5° S., long. 20° to 25° W.	Spring	8	12	21	9	25	46	456	157	81	4	9	1	9	4	5	2	28	S. 40 19 E.	.80	N. 10½ W.	.09	292
	Summer	0	0	9	4	31	97	613	198	44	7	3	0	3	0	0	0	0	S. 43 25 E.	.92	N. 73 E.	.10	336
	Autumn	0	0	2	1	9	86	319	239	108	8	3	3	2	0	1	0	0	S. 33 44 E.	.92	S. 20½ W.	.08	260
	Winter	3	0	10	2	15	24	406	181	90	10	2	3	5	2	1	0	1	S. 34 58 E.	.89	S. 37½ W.	.04	252
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 37 51 E.	.88	....	...	1140
32. Lat. 0° to 5° S., long. 15° to 20° W.	Spring	1	2	1	0	8	11	133	69	28	3	5	1	1	0	1	0	4	S. 34 35 E.	.87	N. 45 E.	.04	89
	Summer	2	0	1	4	20	24	141	69	19	5	0	0	6	0	0	0	0	S. 40 37 E.	.87	N. 50 E.	.13	97
	Autumn	0	0	0	0	6	7	109	101	79	6	1	7	0	0	0	0	0	S. 24 29 E.	.91	S. 46½ W.	.12	105
	Winter	0	0	1	1	1	1	65	38	26	2	2	1	1	0	1	0	0	S. 28 25 E.?	.89	S. 50½ W.	.05	47
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 31 56 E.	.88	....	...	338
33. Lat. 0° to 5° S., long. 15° W. to 11° E.	Spring	0	0	0	0	0	0	42	23	51	22	49	13	23	4	2	0	13	S. 15 16 W.	.70	N. 66 E.	.06	81
	Summer	0	0	0	0	11	9	49	35	59	31	29	5	11	1	1	0	5	S. 5 38 E.	.73	S. 83 E.	.20	82
	Autumn	0	0	0	0	2	0	14	33	36	24	39	15	13	0	0	0	1	S. 16 33 W.	.78	S. 63 W.	.10	59
	Winter	0	0	0	0	6	9	25	14	31	26	34	14	20	3	0	0	0	S. 15 26 W.	.67	N. 4½ W.	.06	61
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 10 22 W.	.71	....	...	283

[1] Computed from the resultants for the seasons.

(Nos. 34 to 42.) **Indian Ocean,** longitude 39° to 110° east.

From observations, for an aggregate period of over 12 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
34 & 35. Long. 39° to 45° E.	Spring	0	0	4	5	29	38	57	44	21	28	32	0	0	0	0	0	1	S. 30° 46′ E.	.72	S. 17° W.	.17	86
	Summer	0	0	0	0	0	0	39	25	97	31	3	1	0	0	0	0	0	S. 7 4 E.	.92	S. 34 W.	.54	65
	Autumn	0	0	5	12	9	21	37	30	51	13	2	0	0	0	0	0	4	S. 32 9 E.	.76	S. 3 W.	.19	61
	Winter	1	4	25	26	18	2	8	0	0	0	0	0	0	0	1	1	2	N. 67 52 E.?	.84	N. 25 E.	.76	29
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 41 E.	.62	....	...	241
36. Long. 45° to 55° E.	Spring	8	0	7	2	7	11	13	17	30	12	38	9	24	6	23	3	5	S. 35 46 W.	.37	S. 89 W.	.30	72
	Summer	3	1	0	0	2	6	39	42	57	31	40	74	89	30	9	0	0	S. 43 34 W.	62	S. 73½ W.	.53	141
	Autumn	0	0	4	8	12	37	86	75	88	3	4	2	9	1	4	0	3	S. 29 37 E.	.76	S. 38 E.	.47	112
	Winter	10	14	64	10	24	27	20	5	1	2	0	0	1	0	5	3	12	N. 68 38 E.	.64	N. 44½ E.	.74	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 15 44 E.	.31	....	...	391

[1] Computed from the resultants for the seasons.

(Nos. 37 to 42.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
37. Long. 55° to 65° E.	Spring	14	9	13	3	14	8	40	23	65	37	13	15	16	14	28	16	19	S. 10° 52′ W.	.28	N. 63° W.	.11	116
	Summer	0	1	9	3	10	13	51	118	102	12	8	0	1	0	3	0	21	S. 21 3 E.	.79	S. 30½ E.	.47	117
	Autumn	0	1	1	1	0	4	19	7	17	9	2	3	3	0	0	0	3	S. 13 14 E.	.69	S. 22½ E.	.36	23
	Winter	24	8	11	6	5	4	6	0	6	2	5	1	16	18	23	13	5	N. 26 41 W.	.43	N. 21 W.	.75	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 8 34 E.	.33	....	...	307
38. Long. 65° to 75° E.	Spring	1	3	2	0	0	1	5	0	3	2	1	0	8	4	9	18	0	N. 43 26 W.??	.49	N. 23½ W.	.43	19
	Summer	3	5	1	3	18	18	38	38	31	13	20	11	12	6	4	1	3	S. 15 23 E.	.53	S. 33 E.	.56	75
	Autumn	1	2	1	1	4	11	20	11	10	3	12	13	3	4	9	7	3	S. 3 47 W.?	.32	S. 27 E.	.32	38
	Winter	27	18	16	0	5	0	0	0	3	2	22	8	46	28	26	17	8	N. 52 5 W.	.55	N. 35 W.	.46	75
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 11 W.	.17	....	...	207
39. Long. 75° to 85° E.	Spring	7	10	19	14	37	29	40	15	19	8	20	17	33	20	24	15	15	S. 38 23 E.	.10	N. 57½ E.	.08	114
	Summer	1	0	0	12	21	24	21	16	17	6	15	8	18	7	4	1	9	S. 21 53 E.	.38	S. 32 E.	.27	60
	Autumn	3	1	12	8	11	10	9	8	25	6	14	7	19	10	5	1	15	S. 7 21 W.	.23	S. 13 W.	.11½	55
	Winter	62	23	20	12	17	7	35	13	26	13	42	25	55	28	53	38	49	N. 56 27 W.	.24	N. 37½ W.	.32	173
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 1 46 W.	.13	....	...	402
40. Long. 85° to 90° E.	Spring	30	12	20	7	22	24	46	23	26	17	27	17	88	36	48	11	57	S. 80 58 W.	.18	N. 23 W.	.14	170
	Summer	3	0	5	6	13	10	24	25	51	21	28	8	13	0	12	1	23	S. 3 38 E.	.49	S. 25 E.	.37	81
	Autumn	12	9	20	17	46	31	53	15	22	21	59	27	42	23	22	7	47	S. 8 40 W.	.17	S. 79 E.	.10	158
	Winter	41	18	23	10	22	11	26	10	30	23	69	62	120	34	73	37	92	N. 85 45 W.	.35	N. 52 W.	.28	234
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 38 31 W.	.20	....	...	643
41. Long. 90° to 100° E.	Spring	37	14	27	13	45	28	61	27	32	36	80	33	87	56	61	14	104	S. 64 8 W.	.19	N. 75 E.	.06	255
	Summer	39	4	36	19	29	16	70	49	73	52	89	50	68	27	83	15	61	S. 44 20 W.	.25	S. 34 E.	.09½	260
	Autumn	21	8	31	8	23	20	30	23	29	23	49	47	69	33	49	22	47	S. 72 49 W.	.22	N. 29 E.	.04	187
	Winter	20	9	14	2	10	10	29	14	39	23	61	35	98	40	68	6	70	S. 78 27 W.	.38	N. 81 W.	.14½	185
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 42 W.	.25	....	...	887
42. Long. 105° to 110° E.	Spring	63	41	72	35	57	63	161	59	79	26	59	23	77	29	93	27	89	S. 51 7 E.	.12	N. 24 W.	.04	351
	Summer	10	7	15	25	104	98	194	66	75	20	18	6	13	7	3	4	9	S. 49 1 E.	.68	S. 51 E.	.52	225
	Autumn	75	17	153	38	130	106	222	81	195	113	124	76	56	50	95	25	105	S. 26 59 E.	.25	S. 2 E.	.10	554
	Winter	97	29	34	0	20	3	18	7	24	22	53	24	53	29	85	51	19	N. 44 52 W.	.38	N. 44½ W.	.54	190
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 41 E.	.16	....	...	1320

[1] Computed from the resultants for the seasons.

(Nos. 43 to 46.) **East Indies.**

Observed at the following places, viz.:—

Banjarmassin, Borneo, by Messrs. J. Wolff, Schob, C. Helfrich and M. A. De Vogel, from 1850 to 1858 inclusive.

Padang, Sumatra, by E. Lange, from January, 1850, to April, 1853, inclusive.

Palembang, Sumatra, by Messrs. J. Van Leer, Bosmans, A. Bierwirth, E. A. Lange and Museman, from October, 1850, to December, 1853, inclusive, and during the years 1855 and 1856.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
43. Padang.	Spring	13	22	222	1	327	0	150	24	40	8	238	0	130	2	95	1	7	S. 79° 9′ E.	.20
	Summer	23	10	234	1	200	1	65	2	35	5	217	5	159	9	134	0	4	N. 4 30 W.	.48
	Autumn	17	1	169	0	257	1	75	0	51	1	211	0	164	1	142	0	2	S. 44 17 E.	.20
	Winter	40	17	216	16	366	6	69	2	30	3	220	10	212	3	124	0	1	N. 65 18 E.	.11
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 2 E.	.07
44. Palembang.	Spring	65	...	85	...	184	...	56	...	47	...	21	...	141	...	107	...	164	N. 27 43 E.	.13
	Summer	16	...	122	...	415	...	110	...	92	...	2	...	12	...	1	...	150	S. 83 2 E.	.62
	Autumn	13	...	49	...	341	...	148	...	138	...	42	...	90	...	36	...	175	S. 59 16 E.	.38
	Winter	44	...	13	...	2	...	11	...	25	...	42	...	462	...	122	...	157	S. 79 20 W.	.64
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 55 E.	.23

[1] Computed from the resultants for the seasons.

(Nos. 45 and 46.) **East Indies.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.
45. Southwestern Sumatra.[1]	January	19	6	84	4	140	0	33	1	9	1	96	6	238	1	83	0	29				
	February	45	7	77	9	142	4	23	1	23	2	72	4	210	1	105	0	56				
	March	35	11	119	0	137	0	58	20	20	2	91	0	121	0	75	0	56				
	April	21	10	106	1	189	0	87	4	35	5	93	0	84	0	92	1	55				
	May	22	1	132	0	185	0	61	0	32	1	75	0	66	2	35	0	70				
	June	13	7	135	0	197	0	49	2	33	3	76	1	56	4	37	0	47				
	July	18	1	121	0	203	0	57	0	36	0	75	4	57	4	51	0	55				
	August	8	2	100	1	215	1	69	0	58	2	68	0	58	1	47	0	52				
	September	2	1	60	0	254	0	71	0	51	1	78	0	63	0	42	0	37				
	October	13	0	89	0	215	1	95	0	77	0	70	0	60	0	49	0	75				
	November	15	0	69	0	129	0	57	0	61	0	105	0	131	1	87	0	65				
	December	20	4	68	3	91	2	24	0	23	0	94	0	233	1	108	0	73				
	Spring	78	22	357	1	511	0	206	24	87	8	259	0	271	2	202	1	171	N. 81° 13′ E.	.15½	N. 67½° E.	.06
	Summer	49	10	356	1	615	1	175	2	127	5	219	5	171	9	135	0	154	S. 89 29 E.	.28	S. 89 E.	.19
	Autumn	30	1	218	0	598	1	223	0	189	1	253	0	254	1	178	0	177	S. 58 27 E.	.19	S. 33½ E.	.11½
	Winter	84	17	229	16	373	6	80	2	55	3	262	10	681	3	296	0	158	N. 70 2 W.	.22	N. 76 W.	.31
	The year	241	50	1160	18	2097	8	684	28	458	17	993	15	1377	15	811	1	660	East.	.09		
46. Banjarmassin.	January	66	...	23	...	41	...	70	...	118	...	320	...	287	...	125	...	0				
	February	77	...	34	...	19	...	78	...	143	...	271	...	356	...	110	...	0				
	March	107	...	100	...	28	...	90	...	155	...	242	...	244	...	104	...	0				
	April	73	...	125	...	146	...	222	...	224	...	134	...	71	...	82	...	3				
	May	51	...	80	...	141	...	431	...	249	...	69	...	71	...	24	...	0				
	June	12	...	32	...	145	...	454	...	317	...	63	...	46	...	11	...	0				
	July	35	...	38	...	110	...	440	...	330	...	76	...	67	...	20	...	0				
	August	11	...	28	...	94	...	489	...	339	...	78	...	72	...	5	...	0				
	September	19	...	17	...	108	...	469	...	352	...	81	...	18	...	15	...	1				
	October	24	...	20	...	95	...	370	...	394	...	150	...	49	...	14	...	0				
	November	29	...	36	...	70	...	298	...	287	...	184	...	146	...	30	...	0				
	December	39	...	59	...	40	...	105	...	162	...	366	...	251	...	94	...	0				
	Spring	231	...	305	...	315	...	743	...	638	...	445	...	386	...	210	...	3	S. 13 11 E.	.28		
	Summer	58	...	98	...	349	...	1384	...	986	...	217	...	185	...	36	...	0	S. 33 12 E.	.71		
	Autumn	72	...	73	...	273	...	1137	...	1033	...	415	...	213	...	59	...	1	S. 16 26 E.	.62		
	Winter	182	...	116	...	100	...	253	...	423	...	957	...	894	...	329	...	0	S. 61 32 W.	.50		
	The year	543	...	592	...	1037	...	3516	...	3080	...	2034	...	1678	...	634	...	4	S. 3 52 E.	.43		

[1] Padang and Palembang combined.

(No. 47.) **Indian Ocean**, longitude 110° to 125° east.

From observations collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
Spring	1	6	7	4	11	13	31	7	7	1	10	5	11	1	11	9	5	S. 48° 20′ E.	.22	S. 71° E.	.04	47
Summer	22	11	24	10	47	59	193	74	87	26	48	22	41	4	23	6	34	S. 29 4 E.	.48	S. 20½ E.	.30	244
Autumn	14	2	11	4	41	20	58	23	30	4	22	15	19	4	12	5	19	S. 34 2 E.	.34	S. 24 E.	.16	101
Winter	32	4	11	3	15	5	6	3	3	4	12	3	14	7	22	21	10	N. 19 6 W.	.34	N. 27 W.	.51	59
The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 22 E.	.18	....	...	451

[1] Computed from the resultants for the seasons.

(No. 48.) **Amboina, Spice Islands.**

Computed from observations made by Messrs. M. A. Schmitz and Hartefield, during the years 1850 to 1854 inclusive.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
	North.	N.E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S.W. or betw'n S. & W.	West.	N.W. or betw'n N. & W.	Calm or variable.		
January	84	101	30	23	27	34	75	125	101		
February	98	104	27	11	6	37	122	121	78		
March	46	89	22	47	8	53	107	160	68		
April	63	61	93	96	39	56	82	28	79		
May	17	62	225	125	18	29	43	27	74		
June	9	98	155	79	11	34	24	16	174		
July	3	87	245	187	11	6	19	15	47		
August	18	72	170	274	10	4	6	13	51		
September	1	11	127	331	30	24	5	3	68		
October	14	7	108	283	43	42	28	11	84		
November	6	7	94	200	39	67	46	63	78		
December	58	33	40	80	13	115	76	72	133		
Spring	126	212	340	271	65	138	232	215	221	N. 69° 41′ E.	.12
Summer	30	257	570	540	32	44	49	46	272	S. 84 51 E.	.56
Autumn	21	25	329	814	112	133	79	77	230	S. 45 19 E.	.54
Winter	240	238	97	114	46	186	273	318	312	N. 38 24 W.	.29
The year	417	732	1336	1739	255	501	633	656	1035	S. 75 15 E.	.23

(Nos. 49 to 54.) **Pacific Ocean**, west of longitude 180°.

From observations for an aggregate period of nearly 5 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
49. Longitude 125° to 135° E.	Spring	75	14	17	32	16	8	17	17	19	7	8	14	20	18	47	37	37	N. 7° 51′ W.	.30	N. 2° W.	.27	134
	Summer	3	0	6	2	12	5	50	66	53	24	28	9	14	6	5	3	40	S. 6 54 E.	.56	S. 11 E.	.57	109
	Autumn	10	0	5	1	10	2	22	25	30	9	11	3	23	4	3	5	3	S. 2 56 W.	.39	S. 1⅓ E.	.42	56
	Winter	173	65	65	9	33	6	20	6	14	12	28	19	82	52	156	52	56	N. 23 0 W.	.50	N. 20½ W.	.46	283
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 51 38 W.	.04	....	...	582
50. Longitude 145° to 160° E.	Autumn	3	0	8	20	16	8	31	6	1	2	5	3	7	0	5	5	3	S. 75 25 E.	.44	S. 23 W.	.26	41
	Winter	18	14	76	59	6	0	7	0	0	6	0	0	4	1	5	0	0	N. 48 30 E.	.78	N. 9 E.	.39	66
51. Longitude 145° to 170° E.	Spring	29	20	71	43	32	17	25	0	4	0	3	0	17	4	4	21	19	N. 50 13 E.	.54	N. 26½ W.	.24	103
	Summer	3	1	4	9	14	24	26	4	1	1	0	0	4	0	0	1	10	S. 70 40 E.	.66	S. 15 E.	.36	34
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 26 E.	.54	......	...	354
52. Longitude 160° to 170° E.	Autumn	8	9	23	22	53	7	7	0	0	0	2	0	2	4	4	0	23	N. 69 0 E.	.62	N. 28 E.	.11	55
	Winter	3	13	29	23	29	22	12	3	0	0	8	1	6	0	3	0	12	N. 77 10 E.	.57	S. 87 E.	.03	55
53. Longitude 170° to 175° E.	Spring	9	9	38	25	36	13	17	3	5	0	6	0	5	5	10	0	14	N. 70 11 E.	.51	N. 27 W.	.10	65
	Summer	9	7	43	47	89	27	34	12	6	2	5	0	10	0	4	0	44	N. 87 12 E.	.60	S. 41 E.	.16	113
	Autumn	17	14	46	24	72	28	45	1	1	0	15	1	3	0	2	0	5	N. 84 14 E.	.64	S. 58 E.	.17	92
	Winter	21	25	42	15	11	19	0	0	0	17	6	6	9	8	0	0	3	N. 42 41 E.	.40	N. 60 W.	.26	61
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 16 E.	.51	....	...	331
54. Longitude 175° to 180° E.	Spring	12	2	17	5	21	2	14	2	2	0	10	6	14	25	16	21	9	N. 22 18 W.	.27	N. 71 W.	.38	60
	Summer	3	3	44	28	72	37	53	16	8	5	0	3	12	4	7	3	21	S. 82 39 E.	.58	S. 58 E.	.37	107
	Autumn	28	19	47	18	66	20	73	6	21	0	2	0	7	0	3	0	12	N. 89 49 E.	.56	S. 68 E.	.33	108
	Winter	61	36	71	43	51	22	16	0	10	3	29	25	41	58	43	48	47	N. 0 31 W.	.32	N. 54 W.	.32	202
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 10 E.	.29	....	...	477

[1] Computed from the resultants for the seasons.

Addendum to Zone 19.

Observations on the Indian Ocean, calculated at the Meteorological Institute of the Netherlands, under Capt. Cornelissen's direction.

		Between N. and E.	Between E. and S.	Between S. and W.	Between W. and N.	Calm.
55. Between 80° and 90° E.	Spring	12	25	22	27	14
	Summer	5	42	32	12	9
	Autumn	13	30	27	31	9
	Winter	13	11	25	34	16
56. Between 90° and 100° E.	Spring	13	22	24	28	14
	Summer	12	22	29	28	9
	Autumn	12	13	29	28	11
	Winter	9	17	25	36	13

ZONE No. 20.

Latitude 5° to 10° South.

The data for the study of the winds of this zone consist of observations made at 4 stations on land, for an aggregate period of 9 years 10 months; and at sea for over 60 years 6 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	over 19 years 6 months
Atlantic Ocean,	....	over 15 years.
Ascension Island,	1	2 years.
Indian Ocean,	....	over 26 years.
East Indies	3	7 years 10 months.

(Nos. 1 to 14.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of over $15\frac{1}{2}$ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
1. Longitude 165° to 180° W.	Spring	24	21	41	44	37	16	23	4	9	1	14	2	3	9	17	5	19	N. 60° 19′ E.	.44	N. 28° W.	.26	97
	Summer	2	26	25	52	123	12	60	27	15	0	2	0	0	1	0	0	13	S. 84 39 E.	.73	S. 75 E.	.23½	120
	Autumn	4	6	19	8	39	30	18	6	0	0	13	0	9	1	7	1	7	S. 52 3 E.	.66	S. 3 E.	.39	55
	Winter	24	48	43	18	59	24	22	6	7	2	10	1	4	9	13	6	31	N. 59 50 E.	.45	N. 25 W.	.26	111
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 13 E.	.50	....	...	383
2. Longitude 160° to 165° W.	Spring	14	7	36	10	37	7	16	0	5	0	9	0	6	1	6	11	19	N. 60 51 E.	.44	N. 73 W.	.24	61
	Summer	1	5	4	0	31	10	10	0	1	0	0	0	0	0	0	0	1	S. 86 11 E.?	.83	S. 46 E.	.29	21
	Autumn	17	14	46	34	84	34	36	0	6	0	3	0	0	1	4	4	14	N. 80 1 E.	.69	S. 76 E.	.07½	99
	Winter	19	12	55	36	33	12	16	13	0	0	0	0	1	3	3	7	10	N. 63 17 E.	.65	N. 13 W.	.12	73
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 56 E.	.63	....	...	254
3. Longitude 155° to 160° W.	Spring	25	50	80	34	46	16	15	0	0	0	0	0	3	0	0	2	19	N. 54 18 E.	.75	N. 19½ W.	.24	96
	Summer	0	0	12	13	13	20	10	6	0	0	0	0	0	0	0	0	0	S. 83 40 E.?	.84	S. 25 E.	.34	25
	Autumn	34	16	89	102	255	60	55	9	4	0	3	3	18	0	6	0	17	N. 78 41 E.	.75	S. 40 E.	.06	220
	Winter	38	25	70	72	85	18	23	0	0	1	5	5	5	0	6	6	28	N. 62 4 E.	.65	N. 50 W.	.15	129
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 21 E.	.72	....	...	470

[1] Computed from the resultants for the seasons.

(Nos. 4 to 14.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
4. Longitude 150° to 155° W.	Spring	38	12	66	66	73	25	47	11	7	3	0	0	0	0	3	4	12	N. 75° 10′ E.	.68	S. 10° W.	.03	122
	Summer	3	3	6	7	21	8	0	3	0	0	0	0	0	0	0	0	1	N. 73 43 E.??	.68	S. 73 W.	.02	17
	Autumn	12	14	70	68	92	32	46	9	3	0	5	0	0	0	4	0	24	N. 80 46 E.	.72	S. 25 E.	.10	126
	Winter	10	28	95	77	76	25	11	3	0	0	4	0	3	2	11	1	0	N. 63 44 E.	.78	N. 9 W.	.12	115
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 8 E.	.71	....	...	380
5. Longitude 135° to 150° W.	Spring	9	9	35	34	80	41	27	2	31	0	0	0	0	3	0	0	13	S. 86 39 E.	.69	S. 62 W.	.04	95
	Summer	8	6	13	10	20	16	38	9	0	0	0	0	0	0	0	0	0	S. 80 15 E.?	.73	S. 7 W.	.10	40
	Autumn	0	4	23	26	6	3	9	9	0	0	0	0	0	0	0	0	0	N. 76 57 E.?	.78	N. 8 E.	.20	27
	Winter	12	13	75	74	145	43	193	14	13	0	0	0	0	0	0	6	13	S. 81 25 E.	.76	S. 14½ E.	.09	200
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 2 E.	.73	....	...	362
6. Longitude 120° to 135° W.	Spring	5	6	11	31	16	21	23	8	0	0	0	0	0	0	0	0	4	N. 85 29 E.?	.75	N. 3½ W.	.23	42
	Summer	0	0	0	3	22	46	49	6	6	3	3	0	0	0	0	0	0	S. 55 57 E.?	.88	S. 5 W.	.33	46
	Autumn	0	0	0	3	19	10	15	6	0	0	0	0	0	0	0	6	0	S. 72 18 E.?	.74	S. 47 W.	.07	20
	Winter	0	2	34	27	47	45	35	0	0	0	0	0	0	0	0	0	0	S. 88 0 E.	.86	N. 34 E.	.17	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 77 13 E.	.78	....	...	171
7. Longitude 110° to 120° W.	Spring	0	0	6	0	21	33	93	12	0	0	0	0	0	0	0	0	0	S. 55 56 E.	.92	N. 36 E.	.04	55
	Summer	0	0	0	0	23	53	75	18	0	0	0	0	0	0	0	0	0	S. 55 43 E.	.94	N. 72 E.	.04	56
	Autumn	0	0	0	0	31	38	101	37	0	0	0	0	0	0	0	0	0	S. 51 37 E.	.93	S. 22½ W.	.04	69
	Winter	0	0	0	1	17	48	63	24	3	10	0	0	0	0	0	0	0	S. 49 10 E.	.86	S. 79 W.	.09	55
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 53 10 E.	92	....	...	235
8. Longitude 105° to 110° W.	Spring	0	0	3	17	102	66	313	55	3	0	0	0	0	0	0	0	0	S. 55 25 E.	.92	N. 27 E.	.11	186
	Summer	0	0	0	0	15	55	263	115	17	0	0	0	0	0	0	0	0	S. 41 51 E.	.95	S. 39½ W.	.12	155
	Autumn	0	0	0	0	20	84	218	71	18	0	0	0	0	0	0	0	0	S. 45 57 E.	.94	S. 38 W.	.05	137
	Winter	0	0	0	6	28	110	234	36	0	0	0	0	0	0	0	0	3	S. 52 49 E.	.95	N. 49 E.	.06	139
	The year[1]	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 57 E.	.94	....	...	617
9. Longitude 100° to 105° W.	Spring	0	0	17	18	69	180	499	120	0	6	0	0	0	0	0	0	0	S. 51 51 E.	.91	N. 16 W.	.05	303
	Summer	0	0	0	0	77	352	939	160	6	3	23	12	0	0	0	0	0	S. 51 31 E.	.99	N. 82 E.	.04	524
	Autumn	0	0	3	3	41	363	728	202	0	0	0	0	0	0	0	0	0	S. 49 18 E.	.96	S. 58 W.	.02	447
	Winter	0	0	16	0	32	161	738	82	1	0	0	0	0	0	0	0	0	S. 49 2 E.	.96	S. 25 W.	.02	343
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 38 E.	.96	....	...	1617
10. Longitude 95° to 100° W.	Summer	0	0	0	0	12	18	167	21	0	0	0	0	0	0	0	0	0	S. 46 59 E.	.97	S. 43 E.	.03	73
	Autumn	0	0	0	0	17	35	79	13	0	0	0	0	0	0	0	0	0	S. 50 22 E.?	.99	N. 83 E.	.07½	48
11. Longitude 90° to 100° W.	Spring	3	0	0	3	9	50	218	46	0	0	0	0	0	3	0	12	0	S. 48 7 E.	.87	N. 33½ W.	.07½	115
	Winter	0	0	0	0	2	27	119	13	12	0	0	0	0	0	0	0	0	S. 44 25 E.	.93	S. 58 W.	.04	58
	The year	0	0	0	0	2	17	16	32	0	0	0	0	0	0	0	0	0	S. 47 7 E.	.94	....	...	354
12. Longitude 90° to 95° W.	Summer	0	0	0	0	9	36	63	0	6	0	0	0	0	0	0	0	0	S. 53 28 E.?	.91	N. 23 E.	.10	38
	Autumn	0	0	0	0	2	17	16	32	0	0	0	0	0	0	0	0	0	S. 41 4 E.?	.94	S. 45½ W.	.10	22
13. Longitude 85° to 90° W.	Spring	0	3	0	0	3	36	220	64	8	0	0	0	0	0	0	0	4	S. 42 56 E.	.94	N. 52 E.	.02	113
	Summer	0	0	0	0	19	67	214	60	3	0	0	0	0	0	0	0	0	S. 47 18 E.	.96	N. 56 E.	.10	121
	Autumn	0	0	0	0	3	63	173	107	18	0	0	0	0	0	0	0	6	S. 40 27 E.	.94	S. 57 W.	.02	123
	Winter	0	0	0	1	0	18	154	33	45	0	0	0	0	0	0	0	0	S. 36 4 E.	.94	S. 52 W.	.08	84
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 51 E.	.96	....	...	441
14. Longitude 78° to 85° W.	Spring	0	0	1	6	12	21	176	36	27	0	3	0	0	0	0	0	12	S. 42 51 E.	.96	S. 80 E.	.04	139
	Summer	0	0	0	6	6	23	299	75	7	0	0	0	0	0	0	0	0	S. 36 0 E.	.95	S. 39 W.	.09	62
	Autumn	0	0	0	0	0	14	106	42	24	0	0	0	0	0	0	0	0	S. 45 38 E.	.96	N. 70 E.	.07	128
	Winter	0	0	5	0	12	46	267	14	28	0	0	0	3	0	0	0	9	S. 42 20 E.	.88	N. 25½ W.	.05½	98
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 39 E.	.93	....	...	427

[1] Computed from the resultants for the seasons.

(Nos. 15 to 25.) **Atlantic Ocean,** longitude 15° to 36° west.

From observations for an aggregate period of over 12 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

(Nos. 15 to 25.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
15. Lat. 5° to 10°S., long. 35° to 36° W.	Spring	3	0	2	4	22	21	41	8	29	0	0	0	1	1	0	0	1	S. 47° 27′ E.?	.78	S. 38° W.	.22	44
	Summer	1	0	0	0	7	12	32	22	5	0	3	0	0	0	0	0	0	S. 41 11 E.?	.87	S. 23½ W.	.32	27
	Autumn	2	1	12	25	15	10	21	8	4	0	0	0	0	0	0	0	0	S. 82 58 E.?	.77	N. 12½ E.	.28	33
	Winter	0	0	2	11	27	7	17	2	0	0	0	0	0	0	0	0	0	S. 79 17 E.?	.92	N. 46 E.	.28	21
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 62 45 E.	.79	....	...	125
16. Lat. 5° to 7° S., long. 34° to 36° W.	Spring	0	0	2	18	28	43	99	30	20	3	1	0	0	0	0	0	0	S. 52 19 E.	.86	S. 18½ W.	.07	81
	Summer	0	0	0	0	0	1	28	7	4	1	0	0	0	0	0	0	0	S. 40 23 E.	.85	S. 39 W.	.23	52
	Autumn	0	0	6	9	9	47	45	18	0	0	0	0	0	0	0	0	0	S. 60 27 E.?	.89	N. 79 E.	.07	45
	Winter	1	3	10	5	23	28	38	6	0	0	0	0	0	0	0	0	0	S. 75 9 E.?	.83	N. 22½ E.	.26	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 55 E.	.84	....	...	219
17. Lat. 7° to 9° S., long. 33° to 35° W.	Spring	8	3	1	14	49	73	112	34	36	7	4	0	0	3	0	0	2	S. 53 23 E.	.79	S. 51½ W.	.07	113
	Summer	0	0	4	3	14	50	89	62	10	0	0	0	0	0	0	0	0	S. 46 22 E.	.89	S. 13½ W.	.18	79
	Autumn	0	0	12	15	22	39	58	40	2	0	0	0	0	0	0	0	1	S. 59 6 E.	.84	S. 86 E.	.03	63
	Winter	0	3	19	24	37	60	53	4	6	1	0	0	0	0	0	0	3	S. 74 46 E.	.83	N. 29 E.	.24	70
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 13 E.	.82	....	...	225
18. Lat. 5° to 10°S., long. 30° to 35° W.	Spring	17	10	29	54	227	231	498	125	79	9	11	0	6	4	5	0	3	S. 56 59 E.	.81	N. 13 W.	.04	436
	Summer	1	2	16	21	81	145	404	185	55	2	6	0	1	0	0	0	0	S. 47 18 E.	.88	S. 19 W.	.12	306
	Autumn	1	5	53	79	140	165	489	101	46	1	1	1	1	1	1	0	0	S. 58 45 E.	.84	N. 34½ E.	.07	363
	Winter	2	4	31	78	215	226	558	103	49	3	3	0	0	0	0	0	0	S. 56 2 E.	.81	S. 21½ E.	.03	424
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 38 E.	.84	....	...	1529
19. Lat. 5° to 7° S., long. 31° to 34° W.	Spring	0	0	0	7	8	44	60	30	4	4	0	0	0	0	0	0	1	S. 49 30 E.	.90	N. 39 E.	.04	53
	Summer	0	0	10	2	18	46	43	7	0	0	0	0	0	0	0	0	0	S. 44 34 E.?	.87	S. 80 W.	.05	43
	Autumn	0	0	6	0	6	45	66	65	0	0	0	0	0	0	0	0	0	S. 45 52 E.	.91	S. 9 W.	.02	63
	Winter	0	3	1	8	10	35	142	33	10	0	0	0	0	0	0	0	0	S. 48 12 E.	.91	N. 10 E.	.02	81
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 47 11 E.	.90	....	...	240
20. Lat. 7° to 9° S., long. 31° to 33° W.	Spring	4	0	0	10	6	31	68	22	3	0	0	0	0	0	0	0	1	S. 51 39 E.?	.88	N. 9 W.	.04	48
	Summer	0	0	0	0	0	22	62	32	7	0	0	0	0	0	0	0	0	S. 40 21 E.?	.81	S. 81½ W.	.16	41
	Autumn	0	0	5	0	12	47	44	20	6	0	0	0	0	0	0	0	0	S. 54 22 E.?	.90	N. 29½ E.	.08	45
	Winter	0	0	0	11	10	52	102	27	5	0	0	0	0	0	0	0	1	S. 51 59 E.	.92	N. 57 E.	.04	69
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 36 E.	.91	....	...	203
21. Lat. 5° to 7° S., long. 29° to 31° W.	Spring	2	0	0	2	5	27	57	29	6	2	0	0	0	0	0	0	0	S. 44 59 E.?	.90	N. 20 W.	.03	43
	Summer	0	0	0	6	2	14	76	46	0	0	0	0	0	0	0	0	0	S. 42 45 E.?	.94	S. 15 W.	.03	48
	Autumn	0	0	0	0	11	29	69	54	0	0	0	0	0	0	0	0	0	S. 43 6 E.	.94	S. 12½ W.	.02	52
	Winter	0	0	0	1	7	42	117	46	1	0	0	0	0	0	0	0	0	S. 46 1 E.	.95	N. 72 E.	.04	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 12 E.	.93	....	...	214
22. Lat. 7° to 9° S., long. 29° to 31° W.	Spring	0	0	0	1	4	28	66	47	1	0	0	0	0	0	0	0	1	S. 43 13 E.?	.94	S. 23½ W.	.05	46
	Summer	0	1	0	0	10	18	81	47	2	0	0	0	0	0	0	0	0	S. 43 16 E.	.90	S. 67 W.	.05½	53
	Autumn	0	0	0	3	5	28	77	33	6	0	0	0	0	0	0	0	0	S. 45 1 E.	.94	S. 1½ E.	.03	51
	Winter	0	0	0	4	26	41	98	15	3	0	0	0	0	0	0	0	0	S. 54 53 E.	.93	N. 43 E.	.14	62
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 29 E.	.92	....	...	212
23. Lat. 5° to 10°S., long. 25° to 30° W.	Spring	3	3	9	7	36	88	151	74	19	0	8	1	0	0	0	0	3	S. 51 57 E.	.89	N. 20½ E.	.13	134
	Summer	0	0	2	6	51	115	609	123	25	11	1	2	0	0	2	0	0	S. 45 21 E.	.94	S. 5½ W.	.03	316
	Autumn	4	0	6	6	21	108	621	90	13	7	12	2	1	0	3	0	0	S. 45 26 E.	.92	S. 43½ W.	.02	298
	Winter	0	0	1	2	35	73	564	83	26	1	1	1	1	1	2	0	3	S. 45 11 E.	.94	S. 8½ W.	.04	265
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 59 E.	.92	....	...	1013
24. Lat. 5° to 10°S., long. 20° to 25° W.	Spring	0	0	6	10	16	43	532	74	10	1	1	0	0	0	1	0	1	S. 45 31 E.	.95	N. 56 E.	.01	232
	Summer	0	0	3	6	37	78	500	73	5	3	0	4	0	0	1	0	0	S. 47 16 E.	.95	N. 42 E.	.03	237
	Autumn	0	0	0	2	18	44	505	77	13	0	3	0	2	0	0	0	0	S. 43 57 E.	.96	S. 36 W.	.03	221
	Winter	0	0	3	1	23	27	418	48	8	2	2	2	2	0	0	0	0	S. 44 55 E.	.95	S. 31 W.	.01	179
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 18 E.	.95	....	...	869
25. Lat. 5° to 10°S., long. 15° to 20° W.	Spring	0	0	2	3	13	21	685	70	10	0	0	0	0	0	0	0	4	S. 44 8 E.	.98	S. 8½ W.	.02	269
	Summer	0	0	1	3	20	29	330	41	0	2	0	0	0	0	0	0	1	S. 46 36 E.	.96	N. 27 E.	.03	142
	Autumn	0	0	1	2	5	31	296	34	0	1	0	0	0	0	0	0	0	S. 45 42 E.	.98	N. 76 E.	.03	123
	Winter	0	0	3	1	16	17	409	37	10	1	1	1	1	0	0	0	0	S. 44 37 E.	.96	S 86 W.	.01	166
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	S. 45 16 E.	.97	....	...	700

[1] Computed from the resultants for the seasons.

(No. 26.) **Ascension Island.**

Computed from observations made by Mr. McSorley, under the direction of Capt. Kitchen, during the years 1854 and 1855

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.										Ratio of resultant to sum of winds.	Monsoon influences.	
	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.		Direction.	Force.
January	0	0	2	9	17	1	0	0	2				
February	0	1	1	11	13	1	1	0	0				
March	0	0	3	11	16	0	0	1	0				
April	0	0	2	11	16	0	0	0	1				
May	0	0	5	15	10	0	0	0	1				
June	0	0	3	15	11	0	0	0	1				
July	0	0	4	17	10	0	0	0	0				
August	0	0	3	18	10	0	0	0	0				
September	0	0	3	17	10	0	0	0	0				
October	0	1	2	22	6	0	0	0	0				
November	0	0	2	12	16	0	0	0	0				
December	0	0	1	9	20	0	0	0	1				
Spring	0	0	10	37	42	0	0	1	2	S. 27° 44′ E.	.83	N. 80° W.	.02
Summer	0	0	10	50	31	0	0	0	1	S. 34 21 E.	.87	N. 73 E.	.09
Autumn	0	1	7	51	32	0	0	0	0	S. 33 1 E.	.88	N. 80½ E.	.09
Winter	0	1	4	29	50	2	1	0	3	S. 17 45 E.	.83	S. 74 W.	.16
The year	0	2	31	167	155	2	1	1	6	S. 28 25 E.	.85		

(Nos. 27 and 28.) **Atlantic Ocean,** longitude 15° west to 13° east.

From observations for an aggregate period of over one year, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation	Time of the year	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
27. Lat. 5° to 10° S., long. 10° to 15° W.	Spring	0	0	0	0	9	19	248	18	13	0	0	0	0	0	0	0	0	S. 44° 33′ E.	.97	N. 57½° E.	.01	102
	Summer	0	0	0	2	2	12	79	9	0	0	0	0	0	0	0	0	0	S. 47 33 E.?	.97	N. 44 E.	.06	35
	Autumn	0	0	0	0	4	5	61	28	0	0	0	0	0	0	0	0	0	S. 41 23 E.?	.97	S. 45 W.	.05	33
	Winter	0	0	0	0	2	9	124	24	1	0	0	0	0	0	0	0	0	S. 43 8 E.	.98	S. 9 W.	.02	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 9 E.	.97	....	...	323
28. Lat. 5° to 10° S., long. 10° W. to 13° E.	Spring	0	0	0	0	0	0	36	16	16	12	13	6	5	0	0	0	0	S. 5 17 E.?	.76	S. 59 E.	.16	35
	Summer	0	0	0	1	3	16	21	5	18	12	16	2	4	0	1	0	0	S. 11 11 E.?	.68	N. 82½ E.	.19	33
	Autumn	0	0	0	0	0	3	3	9	15	17	26	11	9	0	0	0	1	S. 28 51 W.?	.79	S. 87 W.	.31	31
	Winter	0	0	0	0	0	0	19	2	6	1	19	2	2	0	2	3	0	S. 10 33 W.??	.59	N. 19 W.	.10	19
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 6 7 W.	.68	....	...	118

[1] Computed from the resultants for the seasons.

(Nos. 30 to 42.) **Indian Ocean.**

From observations for an aggregate period of over 16 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
30. Long. 39° to 45° E.	Spring	14	15	8	34	51	150	103	127	45	38	4	8	12	19	0	11	29	S. 47° 35′ E.	.60	S. 2° W.	.21	223
	Summer	0	1	0	4	12	177	216	190	91	22	3	1	0	0	2	0	2	S. 38 3 E.	.89	S. 11 E.	.51	240
	Autumn	2	16	25	23	6	0	20	0	28	15	1	0	0	0	0	1	8	S. 77 31 E.?	.41	N. 22½ W.	.12	48
	Winter	37	108	71	58	12	53	9	17	3	9	3	8	0	13	17	14	25	N. 44 12 E.	.55	N. 7 W.	.60	152
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 65 54 E.	.49	....	...	663
31. Long. 45° to 50° E.	Spring	5	0	5	4	17	31	203	35	108	4	9	0	3	4	40	0	15	S. 32 46 E.	.65	S. ½ E.	.12	161
	Summer	0	0	4	0	1	9	249	119	218	21	24	0	3	0	0	1	7	S. 20 49 E.	.88	S. 6 W.	.40	219
	Autumn	0	0	0	0	12	15	26	8	1	1	3	0	0	0	0	0	0	S. 51 35 E.?	.74	S. 81 E.	.20	22
	Winter	28	12	17	15	16	16	13	8	12	8	9	6	17	1	35	7	57	N. 10 48 E.	.22	N. 26 W.	.71	102
	The year[1]	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 23 E.	.55	....	...	504
32. Long. 50° to 55° E.	Spring	13	1	12	6	17	15	107	17	4	0	2	5	7	2	11	2	0	S. 56 15 E.	.57	N. 78 E.	.84	74
	Summer	0	0	0	0	0	1	84	43	23	0	0	0	0	0	0	0	0	S. 31 29 E.	.96	S. 70 E.	.91	51
	Winter	11	12	11	3	2	0	21	6	32	3	25	9	31	4	57	4	8	S. 74 28 W.	.29	N. 9½ E.	.42	80
33. Long. 55° to 60° E.	Spring	9	0	4	4	16	23	63	6	28	11	3	2	5	7	32	1	12	S. 38 27 E.	.34	N. 67 E.	.61	75
	Winter	29	1	10	1	27	0	35	13	32	8	46	13	53	30	112	9	28	N. 27 7 W.	.33	N. 3 E.	.51	149
34. Long. 50° to 65° E.	Autumn	0	0	1	0	4	20	31	9	2	1	0	0	0	0	0	0	0	S. 50 15 E.?	.92	S. 80 E.	...	23
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 36 1 W.	.51	....	...	1839
35. Long. 55° to 65° E.	Summer	0	0	0	1	3	10	65	30	25	2	0	0	0	0	0	0	0	S. 33 56 E.?	.92	S. 66½ E.	...	45
36. Long. 60° to 65° E.	Spring	6	4	2	2	13	15	26	8	8	30	6	2	8	1	29	1	0	S. 6 21 E.	.26	N. 58½ E.	.59	53
	Winter	17	4	5	5	12	14	10	4	12	3	22	3	16	10	37	4	10	N. 67 53 W.	.17	N. 20 E.	.77	63
37. Long. 65° to 80° E.	Spring	4	2	0	1	13	16	22	15	4	1	16	1	9	3	8	9	0	S. 29 16 E.?	.28	N. 30 W.	.11	41
	Summer	0	0	2	0	16	15	96	40	25	1	1	0	2	0	4	1	0	S. 39 21 E.	.84	S. 48 E.	.46	68
	Autumn	2	2	8	1	5	16	37	9	7	2	30	0	2	0	1	8	0	S. 28 50 E.?	.46	S. 23½ E.	.07	43
	Winter	11	9	15	11	23	18	34	13	10	9	30	23	43	28	21	19	10	S. 71 11 W.	.14	N. 48 W.	.44	109
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 24 E.	.39	....	...	261
38. Long. 80° to 85° E.	Spring	20	11	18	10	51	27	48	7	14	4	16	22	21	7	21	6	11	S. 84 16 E.	.23	N. 38 W.	.15	105
	Summer	10	2	18	10	39	35	57	32	15	2	3	0	5	3	3	3	3	S. 62 59 E.	.62	S. 59 E.	.27	80
	Autumn	4	7	31	9	27	38	62	10	8	0	0	1	2	8	0	0	10	S. 74 27 E.	.67	S. 82½ E.	.32½	69
	Winter	2	7	7	11	29	11	28	11	12	8	29	28	33	17	33	10	56	S. 57 43 W.	.16	N. 83 W.	.46	111
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 15 E.	.35	....	...	365
39. Long. 85° to 90° E.	Spring	26	12	21	18	33	43	100	31	30	13	18	16	44	23	26	8	18	S. 41 16 E.	.23	N. 55 W.	.03	160
	Summer	1	8	18	17	41	50	135	49	21	10	16	3	6	3	5	4	13	S. 50 25 E.	.65	S. 55 E.	.36½	133
	Autumn	18	15	34	30	60	61	100	33	13	5	19	8	26	18	20	8	8	S. 70 15 E.	.39	N. 65 E.	.18½	159
	Winter	12	6	18	11	53	32	82	29	39	23	67	91	72	48	74	13	111	S. 48 17 W.	.24	N. 73 W.	.31	260
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	S. 43 58 E.	.29	....	...	712
40. Long. 90° to 95° E.	Spring	6	15	25	27	46	34	72	10	20	15	30	10	28	16	24	15	23	S. 59 8 E.	.22	N. 3 E.	.17	139
	Summer	10	3	23	13	54	44	87	27	15	4	7	4	14	7	20	2	17	S. 63 13 E.	.48	S. 82 E.	.24	117
	Autumn	15	7	13	10	37	15	55	14	14	9	12	2	21	13	15	14	26	S. 62 46 E.	.19	N. 9 W.	.10	98
	Winter	6	0	4	2	25	12	26	16	12	35	18	12	17	11	17	5	9	S. 10 37 W.	.31	S. 62½ W.	.27	76
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 24 E.	.26	....	...	430
41. Long. 95° to 100° E.	Spring	1	3	4	3	17	15	37	11	6	7	4	0	8	1	14	18	7	S. 55 5 E.	.20	N. 35 W.	.30	56
	Summer	1	1	6	5	13	45	42	32	5	2	0	1	3	2	7	1	4	S. 53 40 E.	.69	S. 79 E.	.22	57
	Autumn	5	0	5	0	1	6	61	27	7	0	0	0	0	0	1	0	2	S. 42 41 E.?	.81	S. 41 E.	.31	38
	Winter	0	0	4	7	10	11	21	31	25	7	6	5	14	4	4	1	59	S. 17 37 E.	.37	N. 87 W.	.23	70
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 5 E.	.50	....	...	221
42. Long. 105° to 110° E.	Spring	22	3	28	26	8	54	110	26	52	39	63	37	42	33	43	36	34	S. 23 43 E.	.24	N. 61 W.	.01	239
	Summer	16	10	22	26	196	146	178	33	38	15	34	7	16	6	16	4	45	S. 63 16 E.	.63	S. 87½ E.	.46	270
	Autumn	22	14	22	18	94	94	184	47	67	29	53	17	23	14	23	5	41	S. 33 53 E.	.43	S. 43½ E.	.18½	256
	Winter	37	3	10	2	22	8	25	14	32	24	90	46	110	40	69	19	37	S. 81 13 W.	.44	N. 62 W.	.40	196
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 25 28 E.	.25	....	...	961

[1] Computed from the resultants for the seasons.

(Nos. 43 to 45(*a*).) **Java, East Indies.**

Observed at the following places, viz.:—

Banjoewangi, by J. J. Lindgreen, J. H. Bruijnis, P. A. Bol, H. M. Schwanefeld and Doctors E. H. H. Mulert and Mogk, from January, 1850, to June, 1852; from January 1st to November 8th; and from December 15th to 31st, 1856; and from July to December, 1857, all inclusive.

Batavia, hourly, for the years 1866, 1867 and 1868, by seven Javanese, assistants of Mr. Bergsma, director of the Magnetic and Meteorological Observatory at Batavia.

Buitenzorg, during the years 1852, 1853 and 1854.

Place and kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
43. Buitenzorg.	Spring	32	35	19	100	410	176	16	26	0	S. 4° 47′ W.	.65½		
	Summer	47	53	11	134	381	147	17	28	0	S. 0 18 E.	.58		
	Autumn	47	51	23	244	253	111	19	32	0	S. 15 39 E.	.53		
	Winter	40	38	15	160	289	206	25	30	0	S. 4 36 W.	.58		
	The year[2]	...	...	...	...	..	...	...	...	...	S. 1 3 E.	.58		
44. Banjoewangi.	Spring	130	442	67	540	677	254	56	50	187	S. 33 52 E.	.44		
	Summer	46	108	157	886	881	208	110	23	149	S. 21 9 E.	.63		
	Autumn	9	24	18	869	1011	178	122	15	170	S. 12 51 E.	.13		
	Winter	182	246	38	431	758	363	98	84	166	S. 6 28 E.	.39		
	The year[2]	...	...	...	...	...	...	...	...	...	S. 27 13 E.	.05		
45. Southern Java.[1]	January	67	81	31	179	391	168	51	34	50				
	February	106	158	13	161	265	199	35	46	46				
	March	62	176	24	185	343	156	7	40	67				
	April	54	153	32	211	363	134	36	9	70				
	May	46	148	30	244	381	140	29	27	50				
	June	52	92	64	244	414	144	10	30	57				
	July	22	48	74	331	404	133	66	9	48				
	August	19	21	30	445	444	78	51	12	44				
	September	24	26	20	409	410	65	55	13	67				
	October	17	9	19	410	446	113	54	9	51				
	November	15	40	2	294	408	111	32	25	52				
	December	49	45	9	251	91	202	37	34	70				
	Spring	162	477	86	640	1087	430	72	76	187	S. 19 4 E.	.30	N. 4° W.	.20
	Summer	93	161	168	1020	1262	355	127	51	149	S. 16 29 E.	.61	S. 31 E	.12
	Autumn	56	75	41	1113	1264	289	141	47	170	S. 13 23 E.	.66	S. 14 E	.18
	Winter	222	284	53	591	1047	569	123	114	166	S. 2 45 E.	.43	N. 57 W.	.11
	The year[2]	533	997	348	3364	4660	1643	463	288	...	S. 13 21 E.	.48		

[1] Two preceding numbers combined. [2] Computed from the resultants for the seasons.

The mean direction and intensity of the wind is given, by Mr. Bergsma, as follows:—

45(*a*). Batavia.	January	N. 87° W.	.64	May	N. 66° E.	.28	September	N. 21° E.	.23
	February	N. 83 W.	.61	June	N. 60 E.	.36	October	N. 3 E.	.02
	March	N. 27 W.	.14	July	N. 59 E.	.35	November	S. 62 W.	.25
	April	N. 85 E.	.11	August	N. 58 E.	.29	December	S. 85 W.	.74

(Nos. 46 to 55.) **Pacific Ocean,** west of longitude 180°.

From observations for an aggregate period of over 4 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
46. Long. 110° to 115° E.	Spring	7	4	13	21	44	22	29	11	8	2	8	7	26	19	8	0	14	S. 78° 47′ E.	.22	N. 21½° W.	.13	83
	Summer	4	0	2	7	57	41	104	19	5	5	17	1	2	0	1	0	2	S. 55 32 E.	.79	S. 55 E.	.49	89
	Autumn	6	0	10	15	38	29	46	14	9	2	5	0	16	5	8	1	6	S. 64 47 E.	.49	S. 80 E.	.18	70
	Winter	7	4	4	5	12	7	13	5	7	6	7	11	35	11	19	7	5	N. 89 50 W.	.24	N. 71 W.	.54	55
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 52 E.	.32	....	...	297
47. Long. 115° to 120° E.	Spring	0	0	4	0	19	7	18	10	10	1	5	4	15	2	4	5	8	S. 27 51 E.	.30	S. 60 E.	.04	38
	Summer	1	3	9	15	76	80	121	37	33	5	9	1	4	1	2	0	8	S. 54 45 E.	.75	S. 72 E.	.53	137
	Autumn	9	3	3	6	25	23	41	19	37	12	12	3	15	1	15	4	12	S. 31 4 E.	.40	S. 46 E.	.14	81
	Winter	15	3	5	2	3	2	6	7	4	10	29	[illegible]	60	22	32	15	16	N. 83 33 W.	.53	N. 63 W.	.71	83
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 22 39 E.	.28	....	...	339
48. Long. 120° to 125° E.	Autumn	14	1	15	9	33	0	39	6	27	3	15	10	14	5	8	0	2[illegible]	S. 42 9 E.	.25	S. 58½ E.	.18½	74
	Winter	23	11	13	8	10	0	10	12	20	5	36	35	84	41	64	26	14	N. 76 55 W.	.49	N. 68 W.	.53	137
49. Long. 120° to 130° E.	Spring	8	3	12	5	11	2	26	13	5	7	17	15	15	2	20	9	13	S. 38 6 W.	.11	N. 89 W.	.08	61
	Summer	11	0	6	6	52	16	87	18	16	4	4	4	0	4	6	0	23	S. 56 37 E.	.60	S. 63½ E.	.54½	86
	Autumn	19	1	31	12	37	12	57	13	43	6	22	15	36	14	18	5	53	S. 28 16 E.	.16½	S. 49 E.	.09	131
	Winter	65	26	27	11	12	1	14	14	23	8	61	47	136	87	107	48	30	N. 65 48 W.	.51	N. 58 W.	.56	240
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 7 13 E.	.09	....	...	518
50. Long. 125° to 130° E.	Autumn	5	0	16	3	3	12	18	7	16	3	7	5	22	9	10	5	30	S. 2 15 W.	.22	S. 2 W.	.12	57
	Winter	42	16	14	3	2	1	4	2	3	3	25	12	55	46	43	22	16	N. 53 49 W.	.57	N. 48 W.	.63½	103
51. Long. 145° to 160° E.	Autumn	0	1	6	12	1	6	64	26	11	4	22	6	6	21	3	0	28	S. 17 58 E.	.41	S. 45 E.	.16	73
	Winter	0	3	0	3	3	14	18	0	1	0	18	8	19	11	37	0	0	S. 89 13 W.	.32	N. 89 W.	.32	45
52. Long. 160° to 170° E.	Autumn	0	0	18	6	25	10	45	0	3	5	6	0	4	0	0	0	13	S. 66 26 E.	.60	S. 50½ E.	.35	45
53. Long. 145° to 180° E.	Spring	11	7	28	10	19	8	5	0	1	6	1	10	8	2	0	2	8	N. 56 10 E.	.37	N. 7 E.	.22	42
	Summer	0	4	9	11	23	33	34	9	7	0	6	1	0	3	4	0	11	S. 66 32 E.	.63	S. 52 E.	.04	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 19 E.	.28	....	...	340
54. Long. 160° to 180° E.	Winter	25	2	15	8	9	1	0	3	6	0	9	9	6	15	6	7	4	N. 18 15 W.	.32	N. 50 W.	.50	42
55. Long. 170° to 180° E.	Autumn	7	2	13	3	50	15	6	1	4	0	1	0	1	0	0	8	9	N. 81 50 E.	.64	N. 73 E.	.37	40

[1] Computed from the resultants for the seasons.

Addendum to Zone No. 20.

Observations on the Indian Ocean, calculated at the Meteorological Institute of the Netherlands, under Captain Cornelissen's direction.

		Between N. and E.	Between E. and S.	Between S. and W.	Between W. and N.	Calm.
55(*a*). Between 80° and 90° E.	Spring	16	46	16	14	9
	Summer	12	72	9	5	2
	Autumn	21	57	7	11	3
	Winter	6	25	27	28	15
55(*b*). Between 90° and 100° E.	Spring	12	52	12	19	5
	Summer	11	72	5	7	4
	Autumn	7	77	6	7	4
	Winter	8	33	20	23	16

Supplementary Zone.*

COAST OF BRAZIL. LATITUDE 9° TO 11° SOUTH.

(Nos. 56 to 58.) **Atlantic Ocean,** longitude 29° to 37° west.

From observations for an aggregate period of over 2 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
56. Longitude 34° to 37° W.	Spring	0	7	4	24	25	46	39	20	7	0	3	0	0	0	0	0	3	S. 67° 4′ E.	.79	S. 45° W.	.08	59
	Summer	0	0	8	5	10	39	59	9	6	0	0	0	0	0	0	0	4	S. 58 0 E.?	.87	S. 11½ W.	.20	46
	Autumn	0	0	14	27	20	23	20	11	4	1	1	0	0	0	0	0	0	S. 78 47 E.?	.79	N. 1 W.	.11	40
	Winter	0	0	5	33	44	39	19	5	0	1	1	0	0	0	0	0	0	S. 81 50 E.?	.88	N. 34 E.	.16	49
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 25 E.	.82	....	...	194
57. Longitude 32° to 34° W.	Spring	4	0	3	24	58	57	61	19	1	3	0	0	0	6	0	0	2	S. 68 59 E.	.81	N. 16½ W	.09	79
	Summer	1	0	3	5	6	48	81	23	12	0	0	0	0	0	0	0	2	S. 49 51 E.	.90	S. 20 W.	.23	60
	Autumn	.1	0	23	18	35	72	55	24	0	1	0	0	0	0	0	0	0	S. 70 15 E.	.84	N. 17 E.	.09	76
	Winter	2	0	1	24	35	58	92	12	0	1	0	0	0	0	0	0	0	S. 64 24 E.	.89	S. 83 E.	.05	75
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 47 E.	.85	....	...	290
58. Longitude 29° to 32° W.	Spring	0	0	0	9	24	56	90	50	1	0	0	0	0	0	0	0	0	S. 52 7 E.	.92	S. 41 W.	.00	77
	Summer	0	1	0	0	4	50	110	60	7	0	0	0	0	0	0	0	0	S. 42 41 E.	.95	S. 30 W.	.14	77
	Autumn	0	4	0	9	16	70	119	22	9	1	0	0	0	0	0	0	1	S. 53 0 E.	.92	N. 42½ E.	.01	83
	Winter	0	0	1	21	50	58	126	15	1	0	0	0	0	0	0	0	0	S. 61 45 E.	.91	N. 29½ E.	.15	91
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 33 E.	.92	....	...	328

[1] Computed from the resultants for the seasons.

ZONE No. 21.

LATITUDE 10° TO 15° SOUTH.

The data for the study of the winds of this zone consist of observations made at 2 stations on land, for an aggregate period of 2 years 8 months; at sea for over 54 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	nearly 16 years.
Atlantic Ocean,	....	over 17 years.
South America,	1	4 months.
Indian Ocean,	....	over 21 years.
Australia,	1	2 years 4 months.

* This form of presenting these observations—in a supplementary zone—was necessitated by their having been presented in groups extending both north and south of the parallel of 10° south latitude.

(Nos. 1 to 3.) **Pacific Ocean,** longitude 170° to 180° W.

From observations for an aggregate period of nearly 2 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			
1. Longitude 180° to 175° W.	Summer	0	6	2	3	40	73	31	48	2	0	0	0	0	0	0	0	0	S. 42° 37′ E.	.82	69
	Winter	1	1	7	5	12	16	39	6	3	4	2	0	0	14	22	0	3	S. 63 22 E.	.29	45
2. Longitude 180° to 170° W.	Spring	29	6	63	26	113	98	137	14	24	1	8	2	22	1	20	6	31	S. 77 40 E.	.56	202
	Autumn	7	2	13	19	77	37	53	16	3	2	5	3	5	0	4	1	1	S. 74 19 E.	.70	83
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 67 9 E.	.58	638
3. Longitude 175° to 170° W.	Summer	3	0	11	1	86	62	87	27	28	0	4	0	1	0	1	1	23	S. 59 27 E.	.76	112
	Winter	27	3	8	10	26	31	38	9	0	1	15	6	0	1	15	3	7	S. 83 46 E.	.36	67

[1] Computed from the resultants for the seasons.

(No. 4.) **Pago-pago, Navigators Islands.**

Computed from observations made from January 11th to October 12th inclusive (date and name of observer not preserved).

Time of the year.	N. E.	S. E.	S. W.	N. W.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
January	5	3	0	12	N. 9° 32′ W.??	.43	20
February	3	12	0	13	N. 26 34 E.?	.11	28
March	7	16	1	6	S. 75 58 E.?	.39	30
April	0	22	1	2	S. 42 8 E.?	.80	25
May	1	19	1	6	S. 45 0 E.?	.48	27
June	1	27	2	0	S. 42 53 E.?	.90	30
July	3	22	5	1	S. 39 34 E.?	.68	31
August	0	25	1	5	S. 42 8 E.?	.64½	31
September	8	19	3	0	S. 59 45 E.?	.65½	30
October	0	12	0	0	S. 45 0 E.??	1.00	12
Spring	8	57	3	14	S. 51 38 E.?	.53	82
Summer	4	74	8	6	S. 41 41 E.?	.74	92
Autumn[1]	8	31	3	0	S. 54 10 E.?	.74	42
Winter	8	15	0	25	N. 6 20 W.	.26½	48
The year[2]	...	...	...	...	S. 55 50 E.	.46	264

[1] If we combine these with observations made by Wilkes for 35 days at Tutuila, the direction of the resultant becomes S. 60° 28′ E., and its ratio to the sum of the winds, 68.
[2] Computed from the resultants for the seasons.

(Nos. 5 to 13.) **Pacific Ocean,** longitude 76° to 170° west.

From observations for an aggregate period of over 7 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
5. Longitude 170° to 165° W.	Spring	17	0	5	4	22	0	23	0	8	2	6	8	19	2	18	2	12	N. 17° 39′ W.	.03	N. 81° W.	.40	50
	Summer	5	0	2	3	15	27	40	15	14	0	0	2	1	0	0	0	1	S. 51 36 E.	.77	S. 27 E.	.43	42
	Autumn	5	4	20	3	12	9	12	6	3	0	0	0	0	0	4	0	1	N. 82 15 E.	.60	N. 46½ E.	.25	27
	Winter	13	7	0	16	30	18	23	0	4	0	0	5	9	1	2	1	11	S. 89 19 E.	.46	N. 6 E.	.09	47
	The year[1]	...	...	...	...	...	...	..	...	...	...	...	...	...	...	..	...	...	S. 77 7 E.	.42	....	...	166
6. Longitude 160° to 165° W.	Autumn	28	8	42	8	73	42	51	7	14	3	0	3	0	0	5	3	0	S. 89 22 E.	.64	S. 3 E.	.06	96
7. Longitude 155° to 165° W.	Spring	20	16	45	42	46	28	27	11	5	0	3	8	0	0	22	13	13	N. 72 21 E.	.58	N. 27½ W.	.14	116
	Summer	0	0	6	0	25	9	30	0	0	0	0	0	0	0	0	0	7	S. 70 42 E.?	.81	S. 25 E.	.35	26
	Winter	58	24	77	62	115	44	32	3	9	5	1	0	22	0	29	14	29	N. 61 36 E.	.54	N. 34 W.	.25	175
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 32 E.	.62	....	...	643
8. Longitude 155° to 160° W.	Autumn	49	17	83	72	180	137	79	5	17	2	1	0	5	2	7	14	20	N. 85 32 E.	.70	N. 85½ E.	.08	230
9. Longitude 150° to 155° W.	Spring	46	27	82	61	89	34	35	8	4	0	6	5	9	12	17	12	32	N. 61 18 E.	.54	N. 64 W.	.14	160
	Summer	0	0	29	18	21	11	10	10	0	0	0	0	0	0	0	0	9	N. 85 1 E.?	.74	S. 46 E.	.19½	36
	Autumn	36	25	66	25	86	46	43	6	10	0	7	0	8	6	14	10	38	N. 71 53 E.	.52	S. 69½ W.	.11	142
	Winter	15	8	43	68	41	24	7	0	0	0	0	0	3	0	3	4	13	N. 65 55 E.	.76	N. 40½ E.	.14	76
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 71 34 E.	.63	....	...	414
10. Longitude 120° to 150° W.	Spring	32	30	91	36	136	49	62	0	0	0	0	0	2	2	12	9	25	N. 73 45 E.	.68	N. 76½ W.	.05	162
	Summer	6	4	5	15	21	39	29	3	3	0	7	3	1	1	3	1	3	S. 76 32 E.?	.64	S. 13 W.	.35	48
	Autumn	0	2	23	4	16	12	15	0	0	0	0	0	0	0	0	0	0	N. 85 0 E.?	.82	S. 50 E.	.16	24
	Winter	37	19	229	49	174	54	49	4	3	0	0	0	4	0	10	10	6	N. 67 37 E.	.77	N. 5 E.	.12	216
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 53 E.	.72	....	...	450
11. Longitude 85° to 120° W.	Spring	0	0	0	0	19	37	144	30	0	0	0	0	0	0	0	0	3	S. 49 12 E.	.95	S. 27 W.	.10	78
	Summer	0	0	0	0	0	48	67	12	6	0	0	0	0	0	0	0	0	S. 49 18 E.?	.96	S. 18 W.	.08	44
	Autumn	0	0	2	7	24	72	42	15	3	0	0	0	0	0	0	0	0	S. 62 23 E.	.91	N. 23 E.	.13	55
	Winter	0	4	0	9	39	58	182	7	2	0	0	0	0	0	0	0	0	S. 56 56 E.	.92	N. 20½ E.	.04	100
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 18 E.	.93	....	...	277
12. Longitude 80° to 85° W.	Spring	0	0	4	0	0	32	154	43	4	0	0	0	0	0	0	0	0	S. 44 14 E.	.99	S. 33½ E.	.04	79
	Summer	0	0	0	0	6	2	71	24	0	0	0	0	0	0	0	0	0	S. 42 35 E.?	.96	S. 26½ W.	.03	34
	Autumn	0	0	0	0	8	50	127	8	0	0	0	0	0	0	0	0	0	S. 51 19 E.	.97	N. 53 E.	.12	68
	Winter	0	0	6	0	21	72	314	87	23	0	0	0	0	0	3	0	15	S. 44 10 E.	.91	N. 56½ W.	.04	180
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 23 E.	.95	....	...	361
13. Longitude 76° to 80° W.	Spring	0	0	3	6	62	38	120	52	18	3	3	0	0	0	9	0	0	S. 43 13 E.	.83	N. 5 E.	.07	88
	Summer	0	0	0	0	24	4	89	22	26	6	0	0	0	0	0	0	5	S. 40 3 E.	.86	N. 23 W.	.03	59
	Autumn	0	0	0	0	6	0	81	38	12	0	0	0	0	0	0	0	3	S. 36 40 E.?	.91	S. 20 W.	.05	47
	Winter	0	0	3	0	13	57	194	127	28	0	0	0	0	0	0	0	6	S. 39 34 E.	.92	S. 34 E.	.03½	143
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 47 E.	.88	....	...	337

[1] Computed from the resultants for the seasons.

(No. 14.) **Callao, Peru, South America**

Computed from observations made by Commodore Wilkes, for 61 days, in the summer of 1839 and 1840, combined with those made by Charles Darwin, for 64 days, in April, June and July, 1844, as follows:—

Spring.—North 16, between south and east 138, south 22, between north and west 2.

Direction of resultant, S. 43° 16′ E.??

Ratio of resultant to sum of winds .76.

Number of days, 30.

Summer.—North 98, between north and east 18, east 86, between south and east 1039, south 455½, between south and west 193½, west 80, between north and west 158. Calm or variable, 258.

Direction of resultant S. 24° 30′ E.?

Ratio of resultant to sum of winds .51.

Number of days, 95.

(Nos. 15 to 29.) **Atlantic Ocean.**

From observations for an aggregate period of over 17 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
15.	Spring	7	15	38	48	91	52	114	18	24	6	1	0	0	0	3	3	6	S. 75° 37′ E.	.72	N. 46½° W.	.07	142
Lat. 10°	Summer	0	0	9	13	67	84	138	51	42	0	1	0	0	0	0	0	6	S. 50 8 E.	.79	S. 27 W.	.31	137
to 15° S.,	Autumn	6	16	59	74	102	43	63	35	20	7	6	1	1	0	0	0	3	S. 83 45 E.	.71	N. 16 W.	.15	145
long. 35°	Winter	5	12	34	63	65	38	49	4	0	0	0	0	0	0	0	0	2	N. 87 4 E.	.83	N. 16½ E.	.28	91
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 49 E.	.73	....	...	515
16.	Spring	1	0	12	20	28	21	42	1	1	0	0	0	0	0	1	0	4	S. 78 8 E.?	.81	N. 38 E.	.07	44
Lat. 13°	Summer	0	0	6	6	13	28	39	9	13	2	0	0	1	0	0	0	0	S. 54 13 E.?	.82	S. 27 W.	.26	39
to 15° S.,	Autumn	0	1	15	5	26	18	22	18	1	0	5	0	0	0	0	0	1	S. 68 38 E.?	.74	S. 52 W.	.07	37
long. 35°	Winter	0	3	16	39	28	24	20	2	0	0	0	0	0	0	0	0	0	N. 88 4 E.?	.86	N. 24 E.	.27	44
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 37 E.	.78	....	...	164
17.	Spring	0	0	5	28	37	47	50	14	3	0	0	0	0	0	0	0	16	S. 63 5 E.	.85	S. 11½ W.	.11	67
Lat. 11°	Summer	0	3	2	6	17	39	64	12	5	0	0	0	0	0	0	0	0	S. 57 50 E.?	.89	S. 7½ W.	.18	49
to 13° S.,	Autumn	1	1	10	45	14	29	24	20	0	1	1	0	0	0	0	1	1	S. 79 27 E.?	.78	N. 4½ W.	.15	49
long. 34°	Winter	1	2	18	38	44	44	59	6	0	0	0	0	0	0	1	0	0	S. 79 23 E.	.84	N. 20 E.	.15	71
to 38° W.	The year[1]	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	S. 69 34 E.	.83	....	...	236
18.	Spring	4	0	6	35	59	64	81	15	5	9	4	1	0	0	0	0	9	S. 66 38 E.	.79	S. 48 W.	.07	97
Lat. 13°	Summer	0	1	4	16	31	63	79	15	3	0	0	0	0	0	0	0	1	S. 62 38 E.	.89	S. 4½ E.	.15	71
to 15° S.,	Autumn	2	20	13	36	34	74	43	18	6	0	0	0	1	0	0	2	0	S. 79 5 E.	.77	N. 8½ W.	.12	83
long. 32°	Win er	0	5	13	30	44	63	54	8	0	0	0	0	0	0	0	0	2	S. 76 19 E.	.86	N. 45 E.	.07	73
to 35° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	S. 71 3 E.	.82	....	...	324
19.	Spring	8	3	3	26	58	34	39	22	4	0	1	0	0	0	0	0	4	S. 74 17 E.	.78	N. 22 W.	.09	67
Lat. 11°	Summer	0	0	2	7	10	58	69	19	4	0	0	0	0	0	0	0	0	S. 55 16 E.	.92	S. 6½ W.	.21	56
to 13° S.,	Autumn	2	8	4	26	31	58	43	19	0	0	0	0	0	0	0	0	0	S. 72 30 E.	.84	N. 18 E.	.06	64
long. 32°	Winter	1	6	8	33	27	51	76	1	0	0	0	0	0	0	0	0	0	S. 73 32 E.	.86	N. 32 E.	.07½	68
to 34° W.	The year[1]	...	...	..	..	...	..	...	...	...	...	...	...	...	...	..	...	...	S. 68 31 E.	.84	....	...	255
20.	Spring	0	1	2	12	26	43	79	25	1	0	0	0	0	0	0	0	0	S. 57 51 E.	.90	S. 17 W.	.01	63
Lat. 11°	Summer	0	0	0	7	17	65	77	54	0	0	0	0	0	0	0	0	0	S. 51 25 E.	.92	S. 33 W.	.10	73
to 13° S.,	Autumn	0	0	0	22	27	48	110	20	6	0	0	0	0	0	0	0	0	S. 57 39 E.	.90	S. 23 W.	.01	78
long. 29°	Winter	0	0	3	24	54	56	81	11	0	6	1	0	0	0	0	0	0	S. 67 48 E.	.90	N. 28 E.	.14	77
to 32° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 31 E.	.90	....	...	291
21.	Spring	0	1	2	12	26	43	79	25	1	0	0	0	0	0	0	0	0	S. 70 5 E.?	.86	N. 22 E.	.01	47
Lat. 13°	Summer	0	0	0	7	17	65	77	54	0	0	0	0	0	0	0	0	0	S. 56 19 E.	.90	S. 24 E.	.30	62
to 15° S.,	Autumn	0	0	0	22	27	48	110	20	6	0	0	0	0	0	0	0	0	S. 71 14 E.	.84	S. 74½ E.	.18	70
long. 29°	Winter	0	0	3	24	54	56	81	11	0	0	1	0	0	0	0	0	0	S. 80 52 E.	.87	N. 69 E.	.25	60
to 32° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 69 27 E.	.86	....	...	239
22.	Spring	24	19	65	154	319	206	380	75	58	15	18	3	5	6	8	4	24	S. 70 19 E.	.74	N. 8 W.	.06	461
Lat. 10°	Summer	8	8	23	24	100	129	408	178	55	10	1	6	0	0	0	0	7	S. 48 0 E.	.85	S. 17 W.	.26½	319
to 15° S.,	Autumn	18	32	72	90	204	158	320	40	57	5	1	0	0	2	1	7	6	S. 71 27 E.	.76	N. 6½ E.	.08	338
long. 30°	Winter	15	21	61	142	307	271	395	30	27	0	0	1	1	0	0	1	2	S. 73 32 E.	.84	N. 52 E.	.12	425
to 35° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 65 52 E.	.78	....	...	1543
23.	Spring	7	2	16	14	56	62	159	14	7	1	0	0	0	1	1	0	1	S. 62 51 E.	.84	N. 4 E.	.11	114
Lat. 10°	Summer	9	0	2	11	67	108	312	60	18	12	1	0	0	0	0	0	5	S. 50 39 E.	.91	S. 25 W.	.09	199
to 15° S.,	Autumn	3	3	11	26	76	144	488	49	22	2	7	0	0	0	0	0	2	S. 53 5 E.	.90	S. 21 W.	.05	278
long. 25°	Winter	4	1	6	20	68	131	279	6	1	0	0	0	0	0	0	0	0	S. 60 6 E.	.92	N. 62 E.	.06	172
to 30° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 34 E.	.89	....	...	763
24. Lat. 10°	Spring	0	0	0	0	21	23	116	8	6	0	0	0	0	0	0	0	1	S. 50 59 E.	.94	N. 38½ E.	.01	58
to 15° S.,	Summer	0	0	3	1	24	41	169	23	1	3	0	0	0	0	0	0	3	S. 50 39 E.	.93	N. 38 W.	.01	89
long. 20° to 25° W.	Autumn	0	0	0	6	15	54	185	44	10	0	0	0	0	0	0	0	0	S. 47 44 E.	.95	S. 30 W.	.05	105
25. Long. 15°	Winter	0	0	0	5	33	46	300	25	2	0	0	0	0	0	0	0	0	S. 48 14 E.	.98	S. 3 E.	.06	137
to 25° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 50 31 E.	.94	....	...	645
26.	Spring	0	0	3	6	34	42	258	12	2	0	3	0	0	0	0	0	0	S. 51 59 E.	.94	N. 40½ E.	.03	120
Long. 15°	Summer	0	0	3	4	11	24	151	29	2	0	0	0	0	0	1	1	2	S. 48 11 E.	.92	S. 68 W.	.05	76
to 20° W.	Autumn	0	0	2	1	15	12	138	8	2	1	0	0	0	0	0	0	0	S. 49 59 E.	.93	N. 86 W.	.02	60
	Spring	0	0	1	6	25	59	686	38	12	2	3	3	0	0	0	0	2	S. 46 9 E.	.96	....	...	279
27.	Summer	0	1	3	6	9	36	320	30	2	2	7	4	0	0	0	0	1	S. 45 37 E.	.93	N. 71½ W.	.03	140
Long. 10°	Autumn	0	0	0	2	7	33	283	16	2	0	0	0	0	0	0	0	0	S. 47 2 E.	.98	S. 87 E.	.03	114
to 15° W.	Winter	0	0	3	1	23	48	521	52	6	0	0	0	0	0	0	0	5	S. 46 18 E.	.97	....	...	218
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 46 10 E.	.96	....	...	751
	Spring	0	0	3	1	10	19	409	54	5	0	1	0	0	0	0	3	3	S. 44 17 E.	.94	S. 36 W.	.01	169
28.	Summer	0	2	4	2	8	12	94	32	3	2	2	0	0	0	0	0	0	S. 44 52 E.	.89	N. 34 W.	.05	54
Long. 5°	Autumn	0	0	2	0	18	11	196	31	6	0	1	0	0	0	0	0	0	S. 45 26 E.	.95	N. 77 E.	.03	88
to 10° W.	Winter	0	0	2	3	3	24	265	70	6	1	1	0	0	0	0	0	2	S. 42 20 E.	.96	S. 7½ W.	.04	126
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 26 E.	.94	....	...	437
29.	Spring	0	0	6	3	8	0	24	16	15	5	6	5	6	1	1	0	0	S. 21 4 E.?	.57	N. 7 W.	.11	32
Long.	Summer	0	0	1	0	0	4	13	6	11	8	6	1	2	0	1	3	0	S. 6 14 E.??	.63	N. 84 W.	.15	19
5° W	Autumn	0	0	2	1	0	0	21	8	17	9	13	3	4	1	0	0	0	S. 8 9 W.?	.70	S. 81 W.	.30	26
to 13° E.	Winter	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	S. 45 0 E.???	1.00	S. 83 E.	.49	8
	The year[1]	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 18 52 E.?	.68	....	...	85

[1] Computed from the resultants for the seasons.

(Nos. 30 to 38.) **Indian Ocean.**

From observations for an aggregate period of over 11 years, collected and classified from the logs of numerous sailing vessels at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
30. Long. 40° to 45° E.	Spring	8	27	14	58	40	106	129	295	71	107	1	17	4	20	22	36	63	S. 33° 45′ E.	.56	S. 23° E.	.26	339
	Summer	0	3	3	13	23	175	195	404	157	34	2	1	0	1	0	7	46	S. 32 11 E.	.84	S. 27 E.	.52	355
	Autumn	9	18	13	24	18	21	18	51	11	12	6	11	1	7	0	33	47	S. 76 12 E.	.30	N. 27½ E.	.17	100
	Winter	24	18	2	11	6	11	2	5	2	13	7	9	3	30	38	38	29	N. 30 31 W.	.37	N. 36 W.	.68	88
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 57 E.	.31	....	...	882
31. Long. 45° to 50° E.	Spring	4	1	19	7	10	4	29	24	30	14	15	0	13	14	7	3	11	S. 13 46 E	.32	N. 87 W.	.23	68
	Summer	1	5	12	1	25	23	83	72	52	48	11	6	13	3	4	3	41	S. 22 50 E.	.59	S. 21 W.	.23	134
32. Long. 45° to 70° E.	Autumn	1	5	5	0	7	50	85	8	11	4	9	8	1	0	5	2	6	S. 60 12 E.	.56	N. 75 E.	.18	69
	Winter	13	7	16	6	34	19	32	17	14	11	13	8	12	3	38	9	11	S. 69 44 E.	.14	N. 33 W.	.33	88
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	S. 44 3 E	.45	....	...	461
33. Long. 50° to 70° E.	Spring	0	3	14	6	20	10	67	12	5	3	10	3	3	2	0	0	1	S. 52 39 E.	.65	S. 70 E.	.20	53
	Summer	0	0	0	1	0	22	55	32	12	13	11	1	1	0	0	0	0	S. 32 59 E.?	.81	S. 20 E.	.38	49
34. Long. 70° to 80° E.	Spring	2	2	6	10	35	39	101	29	4	4	3	0	0	0	0	0	3	S. 55 58 E.	.83	N. 73 E.	.14	79
	Summer	1	0	4	9	17	26	143	72	15	2	1	0	0	0	1	0	1	S. 43 40 E.	.88	S. 20½ E.	.14	97
	Autumn	0	0	6	6	10	29	93	32	17	0	0	0	3	0	0	0	4	S. 46 9 E.	.84	S. 34 E.	.10	67
	Winter	2	2	23	12	22	12	69	10	15	12	13	3	7	5	8	2	6	S. 50 40 E.	.46	N. 43 W.	.29	74
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 49 E.	.75	....	...	317
35. Long. 80° to 85° E.	Spring	1	0	25	25	61	74	174	50	21	1	6	0	1	3	2	2	13	S. 57 47 E.	.78	S. 53½ E.	.08	153
	Summer	5	5	8	10	40	135	185	90	13	7	0	0	0	0	0	2	6	S. 52 24 E.	.85	S. 28 E.	.17	169
	Autumn	4	2	4	18	57	59	123	26	10	5	6	0	2	0	0	0	0	S. 58 11 E.	.82	S. 54 E.	.12	105
	Winter	19	18	46	30	30	55	135	21	12	10	7	7	26	11	24	12	22	S. 73 30 E.	.38	N. 41½ W.	.34	162
	The year[1]	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	S. 58 23 E.	.70	....	...	589
36. Long. 85° to 90° E.	Spring	8	2	15	8	35	100	209	68	22	3	14	4	11	4	6	3	8	S. 48 16 E.	.72	S. 21 W.	.06	173
	Summer	2	1	10	10	27	72	231	93	15	5	3	1	3	0	0	0	8	S. 46 33 E.	.86	S. 21 E.	.13	160
	Autumn	6	5	15	16	75	95	186	64	15	5	3	6	6	10	5	4	16	S. 57 19 E.	.71	N. 45½ E.	.06	177
	Winter	17	17	31	23	104	71	151	56	24	5	10	8	17	9	26	18	35	S. 66 24 E.	.49	N. 24½ W.	.25	207
	The year[1]	...	...	...	...	...	...	...	:	..	...	...	...	...	...	...	..	...	S. 53 11 E.	.70	....	...	717
37. Long. 90° to 95° E.	Spring	1	2	23	12	80	114	202	79	30	5	6	10	11	4	0	2	7	S. 53 18 E.	.76	N. 63 E.	.05	196
	Summer	4	3	8	19	33	49	198	61	6	3	2	1	6	1	5	1	7	S. 51 22 E.	.79	S. 68 E.	.05	136
	Autumn	4	6	7	22	41	122	163	74	10	1	8	4	7	8	10	3	1	S. 53 57 E.	.74	N. 37 E.	.05	164
	Winter	15	0	18	8	45	64	269	116	56	10	8	3	4	5	5	2	29	S. 39 26 E.	.70	S. 61½ W.	.14	219
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 44 E.	.74	....	...	715
38. Long. 90° to 100° E.	Spring	2	3	4	8	15	39	100	45	10	5	2	1	1	0	1	3	6	S. 47 53 E.	.79	S 8 W.	.06	82
	Summer	3	2	13	24	27	33	53	0	3	0	2	0	0	0	4	1	7	S. 77 20 E.	.73	N. 20 E.	.33	57
	Autumn	0	0	4	3	14	29	103	30	6	0	0	0	0	0	0	0	1	S. 48 32 E.	.92	S. 34 E.	.17	63
	Winter	5	0	4	6	31	49	160	133	67	12	12	7	6	1	7	7	29	S. 33 39 E.	.72	S. 58 W.	.23	179
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 51 29 E.	.69	....	...	381

[1] Computed from the resultants for the seasons.

(No. 39.) **Northern Australia.**

Observed at Somerset, Cape York, for 28 months, in the years 1865, 1866 and 1867.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
January	4	1	2	1	0	1	3	17	2				
February	2	2	4	2	1	2	3	8	4				
March	1	1	10	7	1	1	1	6	3				
April	1	1	11	14	1	1	1	1	0				
May	0	0	13	17	1	0	0	0	0				
June	0	0	10	17	2	1	0	0	0				
July	0	0	6	22	2	1	0	0	0				
August	0	0	7	22	2	0	0	0	0				
September	0	0	11	16	1	1	0	1	0				
October	1	0	12	16	1	0	1	0	0				
November	1	3	17	7	0	0	0	2	0				
December	1	0	8	3	1	3	2	9	4				
Spring	2	2	34	38	3	2	2	7	3	S. 66 59′ E.	.63	S. 70° E.	.13
Summer	0	0	23	61	6	2	0	0	0	S. 52 1 E.	.89	S. 35 E.	.43
Autumn	2	3	40	39	2	1	1	3	0	S. 69 57 E.	.77	S. 77 E.	.27
Winter	7	3	14	6	2	6	8	34	10	N. 35 2 W.	.30½	N. 54 W.	.77
The year	11	8	110	144	13	11	11	44	13	S. 65 56 E.	.50		

(Nos. 40 to 45.) **Pacific Ocean,** west of longitude 180°.

From observations for an aggregate period of nearly 7 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
	Spring	7	0	17	17	59	50	91	1	16	2	5	12	10	6	9	1	5	S. 64° 48′ E.	.57	N. 43° E.	.16	103
40.	Summer	11	9	8	22	118	60	63	19	18	0	7	1	0	1	0	0	0	S. 73 15 E.	.77	N. $67\frac{1}{2}$ E.	.36	113
Long. 105°	Autumn	4	0	9	5	74	50	114	50	35	7	3	0	0	1	0	0	1	S. 51 53 E.	.81	S. 59 E.	.27	118
to 110° E.	Winter	13	0	3	1	14	0	24	33	45	52	52	25	41	10	13	1	8	S. 30 33 W.	.54	S. $80\frac{1}{2}$ W.	.69	112
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 22 E.	.54	....	...	446
	Spring	0	1	7	8	19	6	33	0	8	9	16	4	20	7	2	0	11	S. 18 52 E.	.29	N. 43 W.	.23	51
41.	Summer	3	0	0	6	54	44	163	14	10	0	2	4	3	1	1	0	4	S. 53 47 E.	.85	S. 82 E.	.44	103
Long. 110°	Autumn	1	9	8	8	23	145	363	365	124	39	27	0	1	0	0	0	11	S. 33 26 E.	.86	S. 41 E.	.35	375
to 115° E.	Winter	19	9	18	8	12	5	107	52	59	58	106	43	69	13	20	7	20	S. 20 46 W.	.45	N. $87\frac{1}{2}$ W.	.41	209
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 46 E.	.51	....	...	738
	Spring	0	0	1	0	6	19	22	0	5	1	25	14	23	12	2	0	8	S. 30 37 W.	.38	N. $79\frac{1}{2}$ W.	.26	46
42.	Summer	0	3	6	13	105	105	129	31	9	11	0	0	1	0	0	0	0	S. 62 13 E.	.87	S. $87\frac{1}{2}$ E.	.70	138
Long. 115°	Autumn	6	1	11	6	52	57	175	110	142	68	91	35	22	3	4	1	69	S. 14 44 E.	.62	S. 23 E.	.24	285
to 120° E.	Winter	16	1	21	4	23	5	22	37	23	36	126	69	101	57	65	9	26	S. 68 46 W.	.49	N. $69\frac{1}{2}$ W.	.56	214
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	S. 10 19 E.	.38	....	...	683
	Spring	0	0	0	0	2	7	6	1	3	0	1	0	0	0	0	0	4	S. 48 35 E.	.73	S. $56\frac{1}{2}$ E.	.21	8
43.	Summer	1	0	2	28	87	111	73	32	26	10	12	0	0	0	0	0	8	S. 66 16 E.	.79	N. 77 E.	.36	130
Long. 120°	Autumn	5	1	4	3	30	38	94	18	37	7	14	9	6	3	3	0	16	S. 38 33 E.	.63	S. 10 E.	.13	96
to 130° E.	Winter	2	2	3	0	0	0	0	1	3	0	10	0	0	0	0	0	5	S. 39 14 W.	.25	N. $71\frac{1}{2}$ W.	.55	9
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 11 E.	.52	....	...	243
	Spring	0	3	5	0	17	11	9	2	0	0	0	0	2	0	1	0	0	S. 81 31 E.	.73	N. 38 E.	.15	17
44.	Summer	0	7	3	5	43	82	54	48	8	0	0	0	0	0	0	0	0	S. 58 31 E.	.85	S. 24 E.	.23	85
Long. 150°	Autumn	3	6	17	14	71	46	107	8	3	0	0	0	4	0	1	0	5	S. 71 1 E.	.80	S. 74 E.	.13	95
to 175° E.	Winter	1	4	9	6	23	27	39	6	3	4	5	0	0	14	28	1	1	S. 74 58 E.	.32	N. 66 W.	.35	57
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 70 32 E.	.67	....	...	254
	Spring	11	1	12	16	43	30	17	1	2	0	0	0	0	0	11	0	0	N. 85 26 E.	.70	N. 36 E.	.23	48
45.	Summer	1	0	2	0	25	19	23	19	5	0	0	0	4	0	0	0	0	S. 55 27 E.	.78	S. 14 E.	.32	33
Long. 175°	Autumn	3	3	8	6	0	0	19	3	0	0	0	0	0	0	0	0	0	S. 84 46 E.	.64	N. $43\frac{1}{2}$ E.	.11	14
E. to 180°.	Winter	5	1	22	2	9	12	20	2	6	6	8	1	4	3	6	3	2	S. 77 59 E.	.29	N. $75\frac{1}{2}$ W.	.30	38
	The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	S. 77 1 E.	.58	....	...	133

[1] Computed from the resultants for the seasons.

ZONE No. 22.

Latitude 15° to 20° South.

The data for the study of the winds of this zone consist of observations made at 8 stations on land, for an aggregate period of 11 years 1 month; at sea for nearly 50 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	about 10 years 6 months.
South America,	2	8 months.
Atlantic Ocean,	....	22 years 6 months.
St. Helena,	1	5 years
Mozambique Channel and Madagascar,	2	1 year.
Indian Ocean,	....	over 15 years 6 months.
Australia,	1	1 year 2 months.
Islands of the Pacific,	2	3 years 3 months.

(No. 1.) **Feejee Islands, Pacific Ocean.**

Computed from observations made under the direction of Commodore Wilkes, for 26 days, in spring, and 67 in summer, about the year 1840, as follows:—

Spring.—North 50, between north and east 10, east 31, between south and east 353, south 43, S. W. 3, west 3, N. W. 30, calm or variable 101.

Direction of resultant S. 50° 22′ E.??

Ratio of resultant to sum of winds .54.

Summer.—North 23, between north and east 62, east 186, between south and east 820, south 120, between south and west 101, west 28, between north and west 89, calm or variable 179.

Direction of resultant S. 44° 33′ E.?

Ratio of resultant to sum of winds .57.

(Nos. 2 to 6.) **Pacific Ocean,** longitude 150° to 180° W.

From observations for an aggregate period of 6 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
2. Longitude 170° to 180° W.	Spring	13	1	21	34	145	78	65	14	22	0	8	0	21	0	16	6	16	S. 78° 7′ E.	.58	N. 12° W.	.18	154
	Summer	8	0	1	16	117	54	107	19	33	4	1	0	4	0	2	2	15	S. 62 37 E.	.76	S. 49 E.	.09	128
	Autumn	11	113	5	18	69	113	169	37	9	3	15	0	6	0	0	0	12	S. 76 20 E.	.62	N. ½ W.	.15	194
	Winter	4	12	18	13	44	94	61	20	7	0	3	2	10	3	13	5	21	S. 71 56 E.	.59	N. 22½ W.	.11	110
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 64 10 E.	.67	....	...	586
3. Longitude 165° to 170° W.	Spring	12	3	11	8	13	22	29	2	5	2	8	0	11	3	1	1	11	S. 73 44 E.	.36	N. 71½ W.	.18½	48
	Summer	11	1	8	3	32	9	37	9	6	0	3	0	7	0	4	2	8	S. 71 5 E.	.50	S. 83 W.	.05	47
	Autumn	5	4	16	2	19	33	53	6	4	0	0	0	0	0	1	1	5	S. 69 53 E.	.74	S. 61½ E.	.20	50
	Winter	6	13	9	10	23	11	30	4	6	0	4	0	0	1	3	0	4	S. 84 9 E.	.57	N. 24½ E.	.10	42
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 12 E.	.54½	....	...	187
4. Longitude 160° to 165° W.	Spring	5	3	24	26	39	8	31	10	18	0	0	0	2	6	3	0	10	S. 82 50 E.	.57	N. 33 W.	.08	62
	Summer	0	0	7	1	6	13	15	3	0	0	0	2	2	1	0	0	0	S. 66 31 E.??	.67	South.	.13	17
	Autumn	2	3	5	22	70	86	108	13	6	1	3	0	7	9	1	3	6	S. 65 41 E.	.75	S. 22 E.	.19	115
	Winter	7	7	18	11	30	23	22	1	1	2	1	0	0	0	11	1	9	N. 82 59 E.?	.58	N. 11 W.	.22	48
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 76 43 E.	.63	....	...	242
5. Longitude 155° to 160° W.	Spring	6	4	34	17	45	55	37	3	6	1	14	1	8	7	21	6	5	S. 88 13 E.	.45	N. 22½ W.	.12	90
	Summer	0	2	1	1	5	27	33	19	3	6	9	0	0	0	3	2	0	S. 43 6 E.?	.72	S. ½ W.	.40	36
	Autumn	46	8	49	50	126	121	148	35	18	8	10	0	6	2	19	7	18	S. 77 46 E.	.62	S. 88 E.	.11	224
	Winter	46	11	65	23	116	32	42	26	7	1	8	2	9	6	38	23	3	N. 67 49 E.	.47	N. 11 W.	.31	153
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 56 E.	.51	....	...	503
6. Longitude 150° to 155° W.	Spring	81	29	114	67	160	61	124	19	12	5	7	2	39	10	35	19	50	N. 75 13 E.	.47	N. 15½ W.	.14	278
	Summer	12	6	14	11	41	52	76	46	9	6	4	0	15	11	7	2	14	S. 58 12 E.	.53	S. 11 W.	.27	109
	Autumn	23	13	26	18	84	59	103	14	24	2	1	1	12	9	11	20	18	S. 78 20 E.	.51	S. 5 E.	.09	146
	Winter	12	28	92	44	97	18	43	4	5	0	0	2	18	7	21	2	17	N. 67 16 E.	.58	N. 10½ E.	.24	137
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 52 E.	.49	....	...	670

[1] Computed from the resultants for the seasons.

(No. 7.) **Tahiti, Society Islands.**

Observed during the years 1858, 1859 and 1860.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or bet. N. & E.	East.	S. E. or bet. S. & E.	South.	S. W. or bet. S. & W.	West.	N. W. or bet. N. & W.	Calm or var.	Direction of resultant.	Ratio of result'nt to sum of winds.	Monsoon influences. Direction.	Force.
January	4	9	6	1	0	0	6	3	2				
February	1	7	10	1	0	0	4	5	0				
March	0	6	8	2	1	2	6	6	0				
April	1	5	9	0	0	2	8	4	1				
May	3	7	6	1	0	0	3	8	3				
June	1	5	7	5	2	2	2	4	2				
July	1	4	8	5	3	5	2	1	2				
August	0	2	8	2	5	8	3	2	1				
September	1	3	7	3	7	6	2	1	0				
October	2	8	8	4	1	4	1	2	1				
November	5	4	6	2	0	0	5	8	0				
December	2	7	4	0	0	1	4	12	1				
Spring	4	18	23	3	1	4	17	18	4	N. 12° 41′ E.	.26	N. 30½° W.	.13½
Summer	2	11	23	12	10	15	7	7	5	S. 49 21 E.	.24	S. 10½ E.	.30
Autumn	8	15	21	9	8	10	8	11	1	N. 71 52 E.	.17½	N. 25 E.	.09
Winter	7	23	20	2	0	1	14	20	3	N. 14 3 E.	.40½	N. 5 W.	.25
The year	21	67	87	26	19	30	46	56	13	N. 42 56 E.	.18½		

(Nos. 8 to 13.) **Pacific Ocean,** longitude 70° to 150° west.

From observations for an aggregate period of 3½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
8. Longitude 145° to 150° W.[1]	Spring	23	5	58	10	89	34	83	5	17	0	13	0	19	7	33	6	51	N. 89° 33′ E.	.38	N. 64 W.	.05½	151
	Summer	3	3	5	4	7	17	15	2	12	0	6	0	4	0	4	1	4	S. 56 21 E.?	.43	S. 19 W.	.23	29
	Autumn	0	0	6	5	6	3	1	1	0	0	0	0	0	0	0	0	1	S. 82 41 E.?	.52	S. 62½ E.	.10	24
	Winter	37	8	43	13	54	27	25	0	0	0	6	0	10	2	8	12	12	N. 64 34 E.	.50	N. 6 E.	.24	86
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 5 E.	.43	....	...	290
9. Longitude 120° to 145° W.	Spring	3	15	50	19	38	52	15	6	4	0	0	0	0	0	3	0	20	N. 82 10 E.	.70	N. 75 E.	.07	75
	Summer	19	9	15	9	19	21	8	2	1	2	3	1	0	1	2	4	6	N. 74 49 E.	.55	N. 55 W.	.11	50
	Autumn	3	7	9	11	26	16	22	4	3	1	1	0	0	0	2	0	0	S. 83 29 E.?	.72	S. 29 E.	.18	35
	Winter	9	20	32	20	66	16	24	6	6	0	1	0	2	1	11	10	7	N. 74 40 E.	.60	N. 30 W.	.09	77
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 49 E.	.63	....	...	237
10. Longitude 85° to 120° W.	Spring	0	0	9	3	54	11	88	8	0	0	0	0	0	0	0	0	0	S. 64 26 E.	.89	S. 71 E.	.10	58
	Summer	2	33	35	154	254	407	660	209	184	44	150	0	4	33	49	0	92	S. 49 50 E.	.66	S. 70 W.	.21	66
	Autumn	0	0	2	8	65	46	45	0	0	3	0	0	3	0	0	2	3	S. 72 14 E.	.85	N. 49½ E.	.13	59
	Winter	6	3	11	6	75	45	119	6	15	0	0	0	0	0	3	3	5	S. 65 23 E.	.79	N. 27 E.	.02	99
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 45 E.	.79	....	...	282
11. Longitude 75° to 85° W.	Spring	2	0	0	0	12	10	144	29	6	1	1	0	0	3	0	0	2	S. 43 33 E.	.90	N. 63 E.	.08	70
	Summer	0	0	2	0	9	8	66	26	18	2	0	0	0	0	0	0	5	S. 38 37 E.?	.87	S. 75 W.	.02	45
	Winter	5	0	0	0	6	31	202	60	20	0	0	0	0	0	5	0	1	S. 41 18 E.	.90	East.	.03	77
12. Longitude 70° to 85° W.	Autumn	0	0	0	0	14	24	81	17	8	0	0	0	0	0	0	0	0	S. 47 57 E ?	.94	N. 68 E.	.15	48
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 40 E.	.88	....	...	473
13. Longitude 70° to 75° W.	Spring	0	0	0	4	2	4	102	44	40	2	0	0	9	0	0	0	16	S. 31 56 E.	.81	S. 86 W.	.13	74
	Summer	0	0	0	0	3	0	85	56	33	3	12	8	3	0	0	0	14	S. 22 4 E.	.84	S. 68 W.	.27	68
	Winter	0	0	0	0	6	13	114	18	12	0	0	0	3	3	0	0	3	S. 40 55 E.	.88	S. 89 E.	.02	57

[1] Including Wilkes' observations at Society Islands. Computed from the resultants for the seasons.

(Nos. 14 and 15.) **Bolivia, South America.**

Observed at the following places, viz. :—

Cochahamba, during eight months of the year 1852.

Lake Titicaca.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.		
14. Lake Titicaca.	The year	...	...	...	...	...	...	...	...	...	Northwest.	
15. Cochahamba.	January	0	1	0	15	0	9	0	2	4		
	February	0	3	1	9	0	7	0	0	8		
	March	0	6	0	8	0	4	1	2	10		
	April	0	6	0	5	0	11	0	2	6		
	June	2	5	0	10	4	0	0	7	2		
	July	0	2	0	11	0	3	0	13	2		
	August	1	1	0	11	0	1	1	4	2		
	September	6	4	1	7	2	1	0	2	3	N. 68° 49′ E.	.27
	Spring	0	4	1	24	0	16	0	2	13	S. 18 31 E.	.42
	Summer	0	12	0	13	0	15	1	4	16	S. 20 52 E.	.15
	Winter	3	8	0	32	4	4	1	24	6	S. 62 56 E.	.10
	The year[1]	...	...	...	...	...	...	...	...	...	S. 47 10 E.	.18

[1] Computed from the resultants for the seasons.

(Nos. 16 to 29.) **Atlantic Ocean,** longitude 5° to 39° west.

From observations for an aggregate period of nearly 19 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
16.	Spring	5	5	23	13	18	19	27	8	4	6	9	0	0	1	3	2	15	S. 79° 10′ E.	.49	S. 40° W.	.16	53
Lat. 17°	Summer	10	1	13	15	18	35	46	17	5	14	0	0	1	0	1	0	2	S. 67 53 E.	.64	S. 2½ E.	.26	59
to 19° S.,	Autumn	5	24	17	16	18	17	26	20	3	0	0	1	0	0	4	0	1	N. 88 57 E.	.61	S. 66 E.	.03	51
long. 36°	Winter	6	30	40	27	16	4	15	1	0	1	0	0	0	0	3	5	1	N. 55 52 E.	.75	N. 6 E.	.39	50
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 25 E.	.58	....	...	213
17.	Spring	1	6	14	24	42	37	30	10	4	0	4	0	0	0	0	0	0	S. 78 48 E.	.77	S. 9½ E.	.03	57
Lat. 15°	Summer	1	2	8	11	32	50	48	8	5	0	0	1	0	0	0	0	1	S. 66 16 E.	.84	S. 1½ E.	.22	52
to 17° S.,	Autumn	3	6	28	18	14	33	29	22	6	0	0	0	1	0	0	0	5	S. 77 41 E.	.69	S. 74 W.	.09	55
long. 35°	Winter	1	24	40	40	40	22	29	0	0	0	0	0	0	0	0	0	0	N. 79 15 E.	.84	N. 12½ E.	.29	65
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 0 E.	.77	....	...	229
18.	Spring	43	27	76	63	174	121	204	69	59	23	18	1	8	0	12	8	24	S. 70 53 E.	.61	S. 16 W.	.14	310
Lat. 15°	Summer	23	19	45	67	158	140	214	88	86	24	11	3	8	1	9	7	15	S. 61 23 E.	.67	S. 6 W.	.26	306
to 20° S.,	Autumn	46	52	140	160	138	90	100	62	41	9	11	2	3	3	19	5	14	N. 84 30 E.	.62	N. ½ W.	.12	298
long. 35°	Winter	41	75	171	92	114	85	93	6	11	0	2	0	2	0	4	3	10	N. 72 21 E.	.72	N. 14 E.	.28	236
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 84 26 E.	.62	....	...	1150
19.	Spring	3	7	16	25	33	30	35	14	9	5	1	3	0	1	3	3	3	S. 76 36 E.	.64	S. 8 W.	.11½	64
Lat. 17°	Summer	5	9	13	10	11	30	48	20	3	3	7	0	0	0	0	6	4	S. 65 29 E.	.61	S. 22 W.	.23	56
to 19° S.,	Autumn	8	18	17	15	20	26	21	12	8	0	0	0	0	0	2	0	3	S. 89 58 E.	.63	N. 11½ W.	.04	50
long. 34°	Winter	3	24	57	31	19	26	30	1	0	1	1	0	0	0	1	0	0	N. 72 32 E.	.76	N. 17 E.	.28	65
to 36° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 59 E.	.64	....	...	235
20.	Spring	8	15	24	47	41	57	62	16	17	8	2	0	0	0	2	0	27	S. 76 45 E.	.64	S. 80 W.	.13	109
Lat. 15°	Summer	1	0	23	15	18	80	64	18	2	0	0	0	0	0	0	0	3	S. 67 41 E.	.84	S. 13 E.	.19	75
to 17° S.,	Autumn	3	10	32	27	51	70	36	3	4	0	1	0	1	0	0	0	5	S. 85 41 E.	.79	N. 34 E.	.07	81
long. 32°	Winter	4	22	44	57	63	46	58	3	0	1	0	0	0	0	0	1	0	N. 86 12 E.?	.80	N. 15 E.	.17	30
to 35° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 81 2 E.	.76	....	...	365
21.	Spring	72	36	118	170	247	138	202	47	78	22	24	6	13	6	15	8	46	S. 83 32 E.	.59	N. 65 W.	.04	416
Lat. 15°	Summer	24	17	57	35	108	141	363	80	42	3	21	1	3	2	4	6	27	S. 59 24 E.	.72	S. 1 W.	.28	311
to 20° S.,	Autumn	96	81	175	104	226	157	244	51	39	6	18	2	15	4	19	16	33	N. 87 57 E.	.59	N. 18 W.	.09	429
long. 30°	Winter	76	55	222	218	269	178	182	69	17	5	0	0	0	1	5	12	5	N. 83 48 E.	.73	N. 32 E.	.06	438
to 35° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	S. 82 28 E.	.63	....	...	1594
22.	Spring	5	8	18	26	17	18	14	14	16	3	1	2	0	1	1	0	3	S. 80 36 E.?	.57	S. 59½ W.	.15	49
Lat. 17°	Summer	3	1	11	19	14	31	37	22	1	0	0	0	0	0	0	2	0	S. 69 20 E.?	.77	S. 7 E.	.28	47
to 19° S.,	Autumn	8	8	24	25	25	30	14	4	1	0	0	0	0	0	0	0	7	N. 81 4 E.?	.74	N. 16⅓ E.	.15	49
long. 32°	Winter	7	11	24	23	25	17	14	3	2	0	0	0	1	0	0	0	0	N. 77 27 E.?	.75	N. 12½ E.	.20	42
to 34° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 15 E.	.69	....	...	287
23.	Spring	6	1	2	32	18	30	46	12	8	0	0	0	0	4	0	1	4	S. 70 22 E.	.71	S. 69½ W.	.10	55
Lat. 15°	Summer	0	4	2	20	35	48	54	37	10	1	0	2	0	0	0	1	4	S. 58 30 E.	.82	S. 14 W.	.29	72
to 17° S.,	Autumn	2	8	27	48	51	63	64	15	3	0	0	0	0	0	0	0	2	S. 80 9 E.	.82	N. 44½ E.	.07	94
long. 29°	Winter	3	9	14	57	34	44	25	3	0	0	0	0	0	0	0	0	0	N. 87 57 E.	.85	N. 23 E.	.30	63
to 32° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 75 34 E.	.78	....	...	284
24.	Spring	17	5	16	28	24	28	29	9	8	8	13	0	1	0	3	2	8	S. 80 25 E.	.50	N. 72 W.	.15	66
Lat. 17°	Summer	5	5	5	13	13	37	82	15	11	1	0	0	0	0	1	2	5	S. 58 36 E.	.76	S. 2 E.	.27	65
to 19° S.,	Autumn	10	12	15	32	42	42	53	18	10	1	0	3	3	2	8	3	6	S. 79 22 E.	.61	N. 63½ W.	.04	87
long. 29°	Winter	6	4	12	49	34	34	22	4	0	0	0	0	0	0	0	0	0	N. 84 24 E.	.81	N. 40 E.	.27	58
to 32° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 36 E.	.65	....	...	276
25.	Spring	55	14	56	32	87	86	111	32	18	5	11	1	1	3	6	21	9	S. 81 13 E.	.56	N. 52 W.	.14	183
Lat. 15°	Summer	14	6	28	27	117	143	295	19	31	3	8	3	6	2	5	13	6	S. 62 15 E.	.76	S. ½ E.	.18	242
to 20° S.,	Autumn	40	32	62	50	119	174	272	64	49	13	4	3	4	0	5	6	19	S. 67 18 E.	.69	S. 19½ W.	.09	305
long. 25°	Winter	25	21	67	87	184	149	96	11	6	0	0	0	0	1	4	1	4	S. 88 56 E.	.81	N. 40 E.	.21	219
to 30° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 74 54 E.	.69	....	...	949
26. Lat. 15° to 20° S.,	Summer	1	0	15	8	57	45	54	3	6	0	7	0	0	10	4	0	2	S. 71 3 E.	.69	N. 4½ W.	.17	71
long. 20° to 25° W.	Autumn	18	0	13	16	57	55	68	13	6	1	6	2	3	5	0	6	7	S. 71 18 E.	.67	N. 18½ W.	.19½	90
27. Lat. 15°	Spring	1	1	10	9	22	23	180	7	2	0	0	0	5	0	0	0	0	S. 54 19 E.	.84	S. 12½ E.	.08½	90
to 20° S.,	Winter	10	2	11	14	38	39	146	21	2	2	0	0	0	2	0	3	1	S. 60 54 E.	.80	N. 60 E.	.04	97
long. 10° to 25° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 33 E.	.78	....	...	436
28. Lat. 15° to 20° S.,	Summer	1	0	5	12	9	28	78	16	3	0	0	4	0	2	1	2	0	S. 54 59 E.	.79	S. 18½ W.	.05	54
long. 10° to 20° W.	Autumn	3	0	0	0	9	7	69	9	8	0	0	0	0	0	0	0	0	S. 46 16 E.?	.89	N. 88 E.	.03	35
29.	Spring	3	6	14	1	54	55	752	113	30	1	2	1	3	0	0	0	8	S. 45 42 E.	.92	N. 88 E.	.04	348
Lat. 15°	Summer	1	1	3	7	21	55	398	74	30	1	12	4	3	1	1	2	6	S. 42 48 E.	.88	N. 88 W.	.03	207
to 20° S.,	Autumn	4	2	1	4	21	23	192	56	19	0	1	0	5	0	0	1	0	S. 42 28 E.	.87	N. 85 W.	.04	113
long. 5°	Winter	0	1	11	9	32	53	439	88	15	10	0	0	0	0	0	0	1	S. 45 54 E.	.93	S. 87½ E.	.04	220
to 10° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 15 E.	.90	....	...	888

[1] Computed from the resultants for the seasons.

(No. 30. **St. Helena, Atlantic Ocean.**

Observed during the years 1855 to 1859 inclusive

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E.	East.	S. E.	South.	S. W.	West.	N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
January	0	0	1	15	10	1	0	0	0				
February	1	0	1	14	7	1	1	0	0				
March	0	1	0	13	10	2	1	1	0				
April	1	0	0	14	8	2	0	0	0				
May	1	1	0	13	8	2	0	1	2				
June	0	3	0	12	8	2	0	1	1				
July	0	0	0	13	11	3	0	0	0				
August	1	1	1	14	8	2	1	1	1				
September	0	0	0	13	12	1	0	1	1				
October	0	0	0	15	9	3	0	0	1				
November	0	1	0	14	9	3	0	1	0				
December	1	1	0	13	10	2	0	0	0				
Spring	2	2	0	40	26	6	1	2	2	S. 23° 14′ E.	.72	N. 30° W.	.04
Summer	1	4	1	39	27	7	1	2	2	S. 23 53 E.	.71	N. 15 W.	.05
Autumn	0	1	0	42	30	7	0	2	2	S. 21 2 E.	.80	S. 18½ W.	.06
Winter	2	1	2	42	27	4	1	0	0	S. 26 42 E.	.80½	S. 63½ E.	.07
The year	5	8	3	163	110	24	3	6	6	S. 23 41 E.	.76		

(Nos. 31 and 32.) **Atlantic Ocean,** longitude 5° west to 12½° east.

From observations for an aggregate period of over 3½ years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
31.	Spring	10	5	17	4	51	186	1037	208	48	16	11	12	8	0	14	4	18	S. 44° 24′ E.	.88	N. 47° E.	.05	550
Lat. 15°	Summer	1	2	3	6	14	33	439	93	42	10	20	6	6	1	6	2	8	S. 38 8 E.	.85	S. 81 W.	.06	231
to 20° S.,	Autumn	0	0	2	5	23	26	183	90	25	3	1	1	0	0	3	0	0	S. 40 48 E.	.90	S. 33½ E.	.02	121
long. 0°	Winter	0	0	5	12	20	33	489	178	42	17	4	0	0	0	3	0	8	S. 39 10 E.	.91	S. 7½ W.	.05	270
to 5° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 40 37 E.	.88	....	...	1172
32.	Spring	0	0	0	1	5	8	79	18	1	0	2	3	0	0	3	0	1	S. 42 21 E.?	.86	N. 20 E.	.11½	40
Lat. 15°	Summer	0	0	0	0	2	3	38	9	18	6	1	0	2	1	0	0	0	S. 25 50 E.?	.84	S. 80 W.	.13	27
to 20° S.,	Autumn	0	0	0	0	1	6	14	19	5	0	0	0	0	0	0	0	1	S. 34 18 E.??	.91	N. 34 W.	.02	15
long. 0°	Winter	0	0	0	0	0	1	98	30	19	0	0	0	0	0	0	0	0	S. 35 5 E.?	.96	S. 54 E.	.06	49
to 12½° E.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 34 28 E.	.89	....	...	131

[1] Computed from the resultants for the seasons.

(Nos. 33 to 36.) **Mozambique Channel and Madagascar.**

Observed at the following places, viz.:—

At sea, for an aggregate period of 196 days, collected and classified at the United States Naval Observatory.

Tamatav, Madagascar, during the months of August, September and October. Date not preserved.

Tananarivou, Madagascar, during the months of January, February and March, 1829.

(Nos. 33 to 36.) **Mozambique Channel and Madagascar.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
33. At sea.	Spring	2	5	1	4	1	6	4	65	15	49	0	17	0	13	0	6	8	S. 4° 11′ W.	.58		
	Summer	0	1	0	0	1	6	10	29	30	5	0	0	2	0	0	0	2	S. 16 51 E.?	.85		
	Autumn	2	1	0	0	1	0	0	5	0	0	0	1	1	1	1	0	2	S. 14 17 W.??	.06		
	Winter	4	51	15	38	6	17	12	8	7	14	6	7	2	21	11	29	40	N. 31 6 E.	.28		
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 19 19 E.	.32		
34. Tananarivou.	January	0	3	12	15	48	12	9	0	0	0	9	0	12	6	27	3	24	N. 62 5 E.?	.28		
	February	2	0	4	14	68	38	25	0	3	0	0	0	0	0	5	0	3	S. 82 42 E.?	.79		
	March	0	0	13	14	71	0	0	0	0	0	0	0	0	0	0	21	31	N. 71 53 E.??	.53		
35. Tamatav	August	2	...	0	...	1	...	3	...	15	...	10	...	0	...	0	...	...	S. 10 6 W.	.78		
	September	2	...	2	...	0	...	2	...	10	...	8	...	2	...	4	...	...	S. 35 16 W.	.44		
	October	3	...	9	...	1	...	6	...	5	...	6	...	0	...	0	...	...	S. 60 46 E.	.28		
36. Aggregate.	Spring	4	10	15	22	73	12	8	130	30	98	0	34	0	26	0	33	47	S. 19 44 E.	.37½	S. 5° E.	.05
	Summer	12	2	0	0	8	12	13	58	150	10	60	0	4	0	0	0	4	S. 3 55 E.	.76½	S. 9 W.	.45
	Autumn	34	2	66	0	8	0	48	10	90	0	84	2	14	2	26	0	4	S. 1 25 W.	.23½	N. 60½ W.	.15
	Winter	10	105	46	105	128	84	58	16	17	28	21	14	16	48	54	61	107	N. 70 18 E.	.34	N. 25 E.	.46½
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 21 12 E.	.33		

[1] Computed from the resultants for the seasons.

(Nos. 37 to 46.) **Indian Ocean,** longitude 50° to 120° east.

From observations, for an aggregate period of nearly 15½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
37. Longitude 50° to 65° E.	Spring	5	1	9	10	17	29	18	21	10	8	12	3	2	2	2	1	1	S. 49° 52′ E.	.53	S. 88° W.	.22	50
	Summer	0	0	4	4	43	39	106	29	13	4	3	1	0	0	0	0	0	S. 53 0 E.	.90	S. 24 E.	.23	82
	Autumn	1	1	6	9	38	60	63	16	9	2	2	1	4	1	2	1	0	S. 60 43 E.	.78	S. 43 E.	.08	72
	Winter	6	5	8	13	48	25	20	7	2	0	2	0	0	1	4	0	8	S. 84 55 E.	.69	N. 12½ E.	.28	50
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 59 E.	.71	....	...	254
38. Longitude 65° to 70° E.	Spring	4	3	5	11	34	40	110	26	18	4	2	4	5	1	1	4	5	S. 52 49 E.	.73	N. 36 W.	.05	92
	Summer	1	0	0	9	24	69	122	68	28	5	3	2	7	1	1	1	0	S. 43 25 E.	.82	S. 25 W.	.12	114
	Autumn	0	0	0	9	33	54	107	29	16	2	5	0	4	1	0	0	1	S. 50 10 E.	.84	S. 26 E.	.06	87
	Winter	1	2	6	11	55	36	55	20	10	4	3	0	5	0	4	0	4	S. 61 57 E.	.72	N. 10 W.	.15	72
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 51 46 E.	.78	....	...	365
39. Longitude 70° to 75° E.	Spring	6	2	13	23	97	109	252	51	16	2	5	0	0	1	8	6	4	S. 58 36 E.	.81	N. 19½ E.	.07	198
	Summer	2	2	2	6	37	85	265	91	36	6	3	1	0	1	2	0	2	S. 44 54 E.	.89	S. 15½ W.	.15	180
	Autumn	0	2	15	5	40	108	213	53	28	7	4	0	1	0	0	2	2	S. 50 37 E.	.86	S. 2½ W.	.05	160
	Winter	5	2	10	38	80	117	165	41	13	5	6	1	6	1	5	3	3	S. 61 38 E.	.78	N. 8 E.	.12	167
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 53 37 E.	.83	....	...	705
40. Longitude 75° to 80° E.	Spring	7	0	20	41	129	185	261	62	19	2	2	3	4	0	2	0	3	S. 61 35 E.	.85	N. 36 E.	.09	247
	Summer	1	2	8	25	47	88	209	79	37	5	8	1	1	1	0	1	1	S. 48 58 E.	.84	S. 39 W.	.10	171
	Autumn	1	1	2	12	74	79	230	53	20	3	4	1	1	0	1	0	3	S. 52 25 E.	.87	S. 6 W.	.06	162
	Winter	1	6	13	28	174	242	290	86	18	4	8	0	3	1	7	7	11	S. 60 46 E.	.84	N. 32 E.	.07	300
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 55 54 E.	.84	....	...	880
41. Longitude 80° to 85° E.	Spring	2	6	25	41	132	147	236	61	26	1	8	1	4	2	2	5	8	S. 62 7 E.	.80	N. 5 E.	.07	236
	Summer	0	0	8	12	43	68	180	37	21	1	1	0	0	0	0	2	0	S. 52 45 E.	.89	S. 4½ E.	.09	124
	Autumn	0	1	6	13	85	109	179	80	26	6	1	0	0	1	3	0	2	S. 53 29 E.	.86	S. 9 W.	.07	171
	Winter	13	11	34	43	184	287	381	97	21	7	5	2	1	2	6	15	21	S. 62 28 E.	.80	N. 7 E.	.07	377
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 57 30 E.	.83	....	...	908
42. Longitude 85° to 90° E.	Spring	2	6	10	10	97	101	147	39	13	5	3	0	6	1	4	2	0	S. 61 34 E.	.80	N. 5 E.	.07	149
	Summer	0	0	0	0	18	37	64	18	4	0	0	0	0	0	0	0	0	S. 52 32 E.?	.93	S. 19½ E.	.12	47
	Autumn	1	2	5	9	58	54	108	31	7	3	2	2	1	3	0	2	3	S. 58 2 E.	.81	N. 39 W.	02	97
	Winter	7	8	8	25	147	168	328	89	27	4	8	0	5	2	19	4	3	S. 57 15 E.	.80	N. 55 W.	.03	284
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 57 10 E.	.83	....	...	577
43. Longitude 90° to 100° E.	Spring	0	3	3	3	52	98	121	53	15	0	0	0	0	0	0	0	0	S. 54 54 E.	.89	S. 77 E.	04	117
	Summer	0	0	6	0	1	9	35	0	1	2	1	0	0	0	1	0	0	S. 53 35 E.??	.80	S. 65½ W.	.05	18
	Autumn	1	0	0	5	28	36	76	34	2	0	0	0	0	0	0	0	0	S. 53 32 E.	.91	S. 44½ E.	.06	61
	Winter	14	1	19	17	74	66	271	89	15	1	2	0	0	0	0	3	1	S. 54 30 E.	.81	N. 40 W.	03	191
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 8 E.	.85	....	...	388

[1] Computed from the resultants for the seasons.

(Nos. 44 to 46.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
44. Longitude 105° to 110° E.	Spring	2	1	11	9	65	32	74	20	11	0	3	0	0	0	1	0	6	S. 64° 12′ E.	.80	N. 56° E.	.36	79
	Summer	3	1	3	4	60	33	51	23	22	2	4	2	3	1	2	2	1	S. 56 41 E.	.72	N. 50 E.	.23	73
	Autumn	3	0	3	0	4	1	62	22	23	2	11	2	6	0	2	0	0	S. 24 25 E.	.71	S. 48 W.	.16	47
	Winter	0	0	0	0	8	11	26	27	56	33	24	5	4	0	0	0	0	S. 3 36 E.	.79	S. 57 W.	.44	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 37 21 E.	.69	....	...	264
45. Longitude 110° to 115° E.	Spring	1	3	16	13	68	62	118	42	48	20	27	5	15	8	2	3	12	S. 43 11 E.	.64	N. 58 E.	.18	155
	Summer	4	0	9	12	84	63	141	41	21	8	13	3	0	4	5	4	5	S. 54 40 E.	.74	N. 67½ E.	.36½	139
	Autumn	3	0	3	5	12	19	106	78	68	22	21	4	9	2	1	0	3	S. 22 16 E.	.76	S. 4½ E.	.14	119
	Winter	0	1	4	0	12	5	42	46	107	93	103	34	25	3	4	2	28	S. 16 52 W.	.70	S. 77 W.	.50	170
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 26 16 E.	.63	....	...	583
46. Longitude 115° to 120° E	Spring	9	3	5	4	79	131	149	84	52	23	13	19	21	4	0	0	32	S. 42 49 E.	.69	S. 80 E.	.35	209
	Summer	14	11	33	35	133	273	202	101	108	66	58	16	23	2	12	3	67	S. 46 34 E.	.61	N. 85 E.	.33	386
	Autumn	11	0	4	0	1	11	38	26	81	16	20	5	5	1	3	0	19	S. 6 47 E.	.63	S. 16 W.	.19	80
	Winter	6	0	3	3	6	4	0	2	8	18	37	26	17	12	10	5	6	S. 63 55 W.	.54	N. 71 W.	.65	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 15 44 E.	.46½	....	...	729

[1] Computed from the resultants for the seasons.

(No. 47.) **Northern Australia.**[1]

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or betw'n N. & E.	East.	S. E. or betw'n S. & E.	South.	S. W. or betw'n S. & W.	West.	N. W. or betw'n N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
January	10	6	4	1	1	1	2	6	...				
February	9	4	1	3	2	2	2	5	...				
March	5	6	4	6	3	3	2	2	...				
April	2	7	1	17	0	1	1	1	...				
May	0	0	5	17	6	2	0	1	...				
June	4	4	5	8	6	1	1	1	...				
July	1	2	5	13	8	0	1	1	...				
August	5	3	7	10	4	0	1	1	...				
September	10	5	3	2	4	2	2	2	...				
October	15	3	3	0	1	1	4	4	...				
November	12	3	2	2	1	1	3	6	...				
December	12	5	4	1	1	1	3	4	...				
Spring	7	13	10	40	9	6	3	4	...	S. 58° 57′ E.	.47	S. 29° E.	.40½
Summer	10	9	17	31	18	1	3	3	...	S. 60 41 E.	.49	S. 32 E.	.42
Autumn	37	11	8	4	6	4	9	12	...	N. 2 21 W.	.46	N. 34 W.	.41
Winter	31	15	9	5	4	4	7	15	...	N. 3 27 E.	.48	N. 26 W.	.41
The year	85	48	44	80	37	15	22	34	...	N. 63 27 E.	.24		

[1] Observed at Sween Island in the Gulf of Carpentaria, from January, 1868, to February, 1869, inclusive.

(Nos. 48 to 50.) **Pacific Ocean**, west of longitude 180°.

From observations for an aggregate period of nearly a year, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
48. Long. 150° to 175° E.	Summer	4	0	0	5	24	28	42	23	26	1	0	0	0	0	0	0	3	S. 48° 29′ E.	.80	S. 3½° W.	.29	52
	Autumn	3	0	4	3	6	3	67	7	7	4	4	0	0	0	1	0	2	S. 44 33 E.	.77	S. 13½ W.	.32	37
49. Long. 150° E. to 180°.	Spring	10	4	17	38	48	12	43	10	6	0	4	2	0	0	0	5	0	S. 86 13 E.	.69	N. 21 E.	.20	67
	Winter	2	5	8	10	9	24	8	22	0	2	2	0	0	0	3	0	0	S. 80 0 E.	.61	N. 6½ W.	.12½	32
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 68 40 E.	.66	....	...	352
50. Long. 175° E. to 180°.	Summer	3	2	10	34	42	71	115	27	17	2	19	0	5	0	0	0	9	S. 57 19 E.	.73	S. 89½ W.	.16	119
	Autumn	3	0	11	9	29	20	35	9	4	0	1	0	10	0	3	0	0	S. 76 25 E.	.60	N. 16½ W	.10½	45

[1] Computed from the resultants for the seasons.

Supplementary Zone.

(Intermediate between Zones 22 and 23.)

Coast of Brazil. Latitude 19° to 21° South.

The material for this zone does not belong exclusively either to the one tnat precedes or to the one that follows, the limit between the two being the parallel of latitude 20°. It is thought best, therefore, to arrange it in a zone by itself. It embraces an aggregate period of nearly 3 years, and was collected and classified at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

(Nos. 51, 52, 53 and 54.) **Atlantic Ocean,** longitude 29° to 39° west.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
51. Longitude 37° to 39° W.	Spring	7	23	20	9	15	10	41	13	22	10	13	1	1	1	7	13	2	S. 70° 34′ E.	.32	S. 33½° W.	.23	69
	Summer	5	13	33	15	11	16	29	8	9	10	6	0	0	1	2	4	3	S. 86 27 E.	.49	S. 26½ E.	.13	55
	Autumn	6	25	40	14	15	12	22	17	10	4	6	2	0	1	1	0	1	N. 84 6 E.	.51	S. 65 E.	.09	59
	Winter	10	30	41	23	6	15	15	2	0	0	0	0	1	6	10	12	2	N. 43 52 E.	.62	N. ½ W.	.36	58
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 13 E.	.44	....	...	241
52. Longitude 35° to 37° W.	Spring	12	9	20	4	13	19	39	21	22	5	5	1	1	2	5	1	3	S. 59 37 E.	.47	S. 16 W.	.32	61
	Summer	2	19	18	3	13	21	29	19	2	4	3	0	0	0	2	5	0	S. 79 14 E.?	.55	S. 6 E.	.18	47
	Autumn	24	16	47	21	20	8	24	18	3	0	6	0	0	0	3	8	2	N. 65 4 E.	.56	N. 5 E.	.16½	66
	Winter	22	42	46	24	16	19	19	1	0	7	1	0	1	0	5	1	9	N. 54 34 E.	.63	N. 3½ E.	.30	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 31 E.	.50	....	...	244
53. Longitude 32° to 35° W.	Spring	16	17	33	22	20	10	14	4	23	3	5	3	0	2	1	7	9	N. 74 3 E.	.38	S. 83½ W.	.18	63
	Summer	2	4	16	17	24	37	42	14	1	2	3	1	0	0	0	3	8	S. 73 21 E.	.70	S. 23 E.	.31	58
	Autumn	30	26	59	18	37	21	18	17	6	2	0	0	0	0	7	7	3	N. 62 47 E.	.61	N. 2 E.	.16	84
	Winter	16	17	37	24	11	26	13	3	4	0	0	0	1	1	4	9	0	N. 60 13 E.	.64	N. 5½ E.	.49	55
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 48 E.	.55	....	...	265
54. Longitude 29° to 32° W.	Spring	10	0	21	19	31	29	28	12	7	4	10	1	3	6	19	19	11	N. 86 4 E.	.33	N. 73 W.	.17	77
	Summer	6	5	10	8	9	33	44	25	8	2	8	4	2	5	4	1	7	S. 53 7 E.	.53	S. 12½ W.	.30	60
	Autumn	22	29	21	22	34	29	58	14	15	3	0	2	1	2	3	2	11	S. 86 41 E.	.55	S. 6 E.	.06	89
	Winter	15	26	28	42	47	26	21	9	0	0	0	0	0	1	10	3	6	N. 70 44 E.	.67	N. 29½ E.	.29	78
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 56 E.	.49	....	...	304

[1] Computed from the resultants for the seasons.

ZONE No. 23.

Latitude 20° to 25° South.

The data for the study of the winds of this zone consist of observations made at 4 stations on land, for an aggregate period of 19 years 4 months; and at sea for over 65 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	over 12 years 3 months.
South America,	1	5 months.
Atlantic Ocean,	....	24 years.
Indian Ocean and Mozambique Channel,	....	over 28 years 6 months.
Isles Bourbon and Mauritius,	2	14 years.
New Caledonia,	1	4 years 11 months.

(Nos. 1 to 17.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of over 11 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
1. Long. 175° W. to 180°.	Spring	7	1	20	20	51	33	47	1	21	0	8	0	13	4	2	1	14	S. 71° 54′ E.	.52½	N. 67½° W.	.03	82
	Summer	8	8	4	19	29	14	17	12	8	1	22	3	14	3	2	0	0	S. 59 59 E.	.32	N 85½ W.	.27	54
	Autumn	2	4	14	30	78	56	78	21	10	2	7	0	3	0	4	0	3	S. 69 24 E.	.75	S. 62 E.	.17	104
	Winter	1	12	12	28	45	37	26	23	2	0	6	0	0	0	0	0	8	S. 76 41 E.	.72½	N. 84 E.	.16	67
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 71 30 E.	.58	....	...	307
2. Long. 170° to 175° W.	Spring	11	11	36	12	196	43	32	18	24	12	52	11	37	5	13	0	21	S. 71 11 E.	.41	N. 32 W.	.13½	178
	Summer	10	4	24	31	129	62	55	179	40	22	66	30	27	5	26	7	14	S. 36 32 E.	.47½	S. 52½ W.	.22	244
	Autumn	46	39	100	83	267	217	296	138	87	30	44	16	18	9	17	9	18	S. 71 12 E.	.63½	N. 74 E.	.15	478
	Winter	26	20	49	52	92	170	184	79	51	7	4	3	8	1	13	3	10	S. 65 12 E.	.67½	S. 77½ E.	.16	257
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 53 E.	.52	....	...	1157
3. Long. 165° to 170° W.	Spring	3	0	2	18	15	9	3	6	5	3	7	0	0	0	0	3	5	S. 59 2 E.?	.43	N. 79½ W.	.07	26
	Summer	3	0	3	8	14	13	11	6	7	0	1	1	1	0	5	1	3	S. 71 30 E.?	.54	N. 48½ E.	.09	26
	Autumn	1	1	16	5	21	28	24	30	22	0	0	0	3	0	4	0	9	S. 55 17 E.	.64	S. 33½ E.	.15	51
	Winter	13	3	22	5	18	17	33	7	16	8	21	0	0	0	6	7	9	S. 60 38 E.	.35	N. 65 W.	.15	62
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 45 E.	.50	....	...	165
4. Long. 160° to 165° W.	Spring	10	9	10	16	35	52	67	19	27	6	17	9	24	0	6	7	12	S. 49 33 E.	.44	S. 23 W.	.10	109
	Summer	1	1	9	5	4	15	20	3	0	6	22	10	12	0	13	0	4	S. 7 31 W.?	.23	S. 85 W.	.41	42
	Autumn	10	9	71	20	146	111	136	57	24	4	19	0	12	2	11	9	18	S. 70 42 E.	.65	S. 5½ E.	.24	216
	Winter	20	5	36	30	91	53	104	19	18	2	8	2	5	3	12	12	13	S. 76 59 E.	.59	N. 72½ E.	.23	144
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 62 33 E.	.42	....	...	511
5. Long. 155° to 160° W.	Spring	12	6	31	12	31	28	69	3	9	2	10	4	6	0	12	0	14	S. 75 54 E.	.48	N. 78½ E.	.05	83
	Summer	2	3	10	10	15	19	26	5	25	11	12	0	2	0	5	1	6	S. 43 41 E.	.49	S. 20 W.	.24	51
	Autumn	38	15	40	27	65	101	83	40	17	8	32	5	8	3	4	9	13	S. 71 47 E.	.51	S. 61 E.	.07	169
	Winter	59	9	92	43	97	43	67	9	10	6	14	8	19	0	24	7	9	N. 70 53 E.	.43	N. 3½ W.	.27	172
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 44 E.	.44	....	...	475
6. Long. 150° to 155° W.	Spring	7	11	17	27	45	50	67	7	4	12	8	3	0	2	18	5	10	S. 76 20 E.	.54	N. 72 E.	.15	98
	Summer	2	0	6	2	16	6	5	6	19	4	22	4	4	0	2	4	5	S. 8 16 E.?	.37	S. 59½ W.	.39	36
	Autumn	5	13	34	19	42	58	63	13	5	8	12	3	8	1	15	10	13	S. 78 11 E.	.49	N. 52½ E.	.12	107
	Winter	27	26	61	41	91	27	69	13	13	2	8	3	9	5	21	6	19	N. 79 54 E.	.51	N. 23½ E.	.28	147
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	S. 66 19 E.	.42	....	...	388
7. Long. 120° to 150° W.	Spring	25	16	56	15	70	54	48	13	14	2	5	0	10	10	29	38	18	N. 69 57 E.	.40	N. 81½ W.	.07	141
	Summer	12	26	40	7	12	11	11	2	14	0	5	2	5	21	21	11	1	N. 36 47 E.	.42	N. 42½ W.	.28	60
	Autumn	14	4	10	4	9	18	12	10	18	7	3	1	4	0	3	3	3	S. 61 17 E.?	.35	S. 25 W.	.33	41
	Winter	12	46	44	37	111	30	49	1	12	0	4	2	7	5	11	6	17	N. 77 10 E.	.60	N. 88 E.	.14	131
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 52 E.	.46	....	...	373
8. Long. 100° to 120° W.	Summer	13	11	10	0	28	22	29	15	19	0	5	0	0	5	4	3	23	S. 69 29 E.	.42	N. 3 W.[2]	.25	62
	Winter	3	2	3	15	24	22	11	10	3	0	1	0	5	0	0	0	6	S. 76 13 E.?	.65	N. 42½ E.[2]	.33	35
9. Long. 95° to 120° W.	Spring	2	0	14	6	45	6	21	0	0	0	6	0	6	0	6	6	15	N. 87 54 E.?	.48	N. 9½ E[2]	.42	44
10. Long. 90° to 120° W.	Autumn	12	5	14	6	28	12	35	9	3	0	2	1	0	0	0	2	13	S. 81 46 E.?	.57	N. 26 E.[2]	.35	47
11. Long. 80° to 100° W.	Summer	1	6	0	6	16	17	41	4	3	0	1	0	11	3	1	8	7	S. 63 46 E.?	.38	N. 16 W.[2]	.24	42
12. Long. 80° to 95° W.	Spring	9	6	0	6	59	18	72	0	6	0	3	0	4	0	3	21	17	S. 76 52 E.	.54	N. 23 E.[2]	.40	75
	Winter	0	0	0	6	23	35	115	9	15	0	6	0	6	0	0	0	20	S. 48 28 E.	.77	S. 56½ E.[2]	.20	78
13. Long. 70° to 120° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 45 40 E.	.57	....	...	692
14. Long. 70° to 90° W.	Autumn	0	0	0	0	14	6	21	20	21	3	3	0	0	0	0	0	0	S. 32 13 E.?	.83	S. 5½ E.[2]	.31	29
15. Long. 75° to 80° W.	Spring	6	0	0	0	0	2	54	35	31	0	3	0	0	0	5	3	0	S. 26 51 E.?	.74	S. 16 W.[2]	.26	46
	Winter	0	0	0	0	0	0	63	45	10	0	5	0	0	0	0	0	12	S. 30 18 E.?	.86	S. 4 E.[2]	.35	45
16. Long. 70° to 80° W.	Summer	9	0	2	0	3	0	52	36	36	0	21	27	0	6	9	0	5	S. 1 41 E.	.54	S. 70 W.[2]	.42	69
17. Long. 70° to 75° W.	Spring	0	0	0	0	6	55	54	83	4	4	0	0	0	0	0	0	16	S. 17 29 E.	.81	S. 16 W.[2]	.40	75
	Winter	0	0	0	0	6	9	39	31	34	3	9	0	3	0	0	0	2	S. 22 49 E.?	.82	S. 13½ W.[2]	.37	45

[1] Computed from the resultants for the seasons.

[2] These apparent deflections from long. 70° to long. 120° W. are due, perhaps, less to monsoon influences, properly so called, than to difference of distance from the South American coast; the mean resultant for the year with which those for these seasons are all compared being that for the entire area included between the meridians just named.

(No. 18.) **Rio Janeiro, Brazil.**

Computed from observations made by Charles Darwin for 68 days, in 1832, by Commodore Wilkes for 46 days, in 1838 and 1839, and by Burmeister for 48 days, in 1850.

Time of the year.	North.	N. E. or bet. N.& E.	East.	S. E. or bet. S. & E.	South.	S. W. or bet. S.& W.	West.	N. W. or bet. N.& W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.
Spring	5	11	0	10	16	6	3	5	2	S. 20°21′ E.??	.20
Summer	8	8	0	13	7	0	1	5	2	N. 84 28 E.??	.22½
Autumn	16	112	27	98	44	66	9	42	42	S. 68 38 E.?	.21
Winter	36	78	29	290	27	30	50	101	271	S. 58 15 E.??	.19
The year[1]	...	...	...	...	...	...	...	...	...	S 62 28 E.?	.18½

[1] Computed from the resultants for the seasons.

(Nos. 19 to 35.) **Atlantic Ocean.**

From observations for an aggregate period of 24 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
19.	Spring	33	39	111	39	86	34	81	42	55	23	42	15	28	13	24	15	36	S. 82° 9′ E.	.29	S. 23½° W.	.15	239
Lat. 20°	Summer	47	58	121	80	78	27	37	23	40	15	52	17	15	7	20	16	9	N. 66 0 E.	.36	N. 17½ W.	.05	221
to 25° S.,	Autumn	37	39	111	82	90	33	58	31	49	27	27	20	22	6	12	6	20	N. 83 44 E.	.40	S. 43½ E.	.07½	224
long. 40°	Winter	62	47	127	56	74	35	43	15	16	10	25	10	24	9	11	20	13	N. 57 32 E.	.44	N. 10 E.	.14	199
to 45° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 33 E.	.36	....	...	883
20.	Spring	10	17	28	5	7	11	14	5	10	16	4	4	5	4	7	6	3	N. 71 23 E.	.23	S. 18½ W.	.28½	52
Lat. 23°	Summer	13	22	51	6	8	1	7	4	4	4	2	0	1	2	6	2	0	N. 45 39 E.?	.61	N. 57 E.	.16	44
to 25° S.,	Autumn	15	27	12	8	6	1	8	5	2	3	5	3	4	0	2	2	0	N. 38 0 E.?	.43	S. 84 W.	.04	34
long. 37°	Winter	27	50	27	16	4	6	7	1	4	0	3	0	3	6	12	2	3	N. 29 17 E.	.62	N. 1 W.	.20	57
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 41 33 E.	.46	....	...	187
21.	Spring	18	12	15	6	10	6	35	10	27	13	18	4	7	5	8	10	1	S. 36 2 E.	.18	S. 38 W.	.35	68
Lat. 21°	Summer	16	8	31	11	9	19	16	14	13	4	6	1	0	3	6	3	1	N. 85 37 E.	.40	N. 40½ W.	.13	54
to 23° S.,	Autumn	14	28	29	14	10	12	16	11	5	8	14	2	1	0	2	3	2	N. 72 0 E.	.38	S. 74½ E.	.05	57
long. 37°	Winter	38	48	60	24	6	12	7	10	6	1	0	0	1	0	15	17	3	N. 37 4 E.	.64	N. 10 E.	.39	78
to 39° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 40 E.	.34	....	...	257
22.	Spring	120	94	160	57	104	91	106	70	87	48	85	22	56	21	48	43	8	N. 79 39 E.	.22	S. 39½ W.	.27	407
Lat. 20°	Summer	130	99	153	64	83	43	111	28	74	33	44	11	20	4	23	20	11	N. 67 43 E.	.36	S. 9 E.	.04	317
to 25° S.,	Autumn	107	142	182	80	118	69	110	61	59	39	67	18	16	11	29	26	14	N. 71 19 E.	.37	S. 23 E.	.06	383
long. 35°	Winter	114	138	244	53	69	47	47	22	25	6	13	11	6	6	39	27	12	N. 43 41 E.	.59	N. 18½ E.	.27	293
to 40° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 49 E.	.37	....	...	1400
23.	Spring	29	17	15	8	14	15	15	17	24	8	24	2	5	0	2	4	2	S. 65 57 E.	.22	S. 2 E.	.33	67
Lat. 21°	Summer	12	12	35	21	18	13	14	14	0	2	3	0	0	0	2	5	2	N. 71 3 E.	.61	N. 78 E.	.17	51
to 23° S.,	Autumn	41	38	70	29	12	15	39	20	11	0	14	1	1	5	3	3	2	N. 61 57 E.	.49	N. 27 E.	.07	101
long. 34°	Winter	19	32	42	11	8	19	13	8	1	6	0	3	2	0	8	6	1	N. 50 20 E.	.54	N. 11½ E.	.18	60
to 37° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 4 E.	.44	....	...	279
24.	Spring	28	22	11	7	8	1	9	12	20	9	4	3	12	2	4	3	7	N. 45 8 E.	.14	S. 33 W.	.37	54
Lat. 23°	Summer	27	31	35	11	6	3	9	0	1	0	2	0	1	0	4	10	0	N. 31 21 E.?	.72	N. 21 E.	.21	47
to 25° S.,	Autumn	12	21	49	19	15	6	16	10	8	4	8	0	1	0	2	6	0	N. 64 29 E.	.53	S. 43 E.	.26	59
long. 34°	Winter	21	18	24	4	2	1	0	1	0	0	2	1	0	0	3	9	0	N. 19 52 E.?	.78	N. 5½ W.	.39	29
to 37° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 36 2 E.	.51	....	...	189
25.	Spring	163	93	116	76	135	73	103	46	62	20	44	1	26	12	50	55	52	N. 60 32 E.	.35	S. 76½ W.	.19	376
Lat. 20°	Summer	98	38	115	71	185	112	187	39	53	19	15	11	27	12	30	34	33	N. 89 45 E.	.46	S. 21½ E.	.18	360
to 25° S.,	Autumn	107	79	132	55	94	50	95	43	29	12	20	2	21	12	20	26	10	N. 64 8 E.	.44	N. 23 W.	.03	269
long. 30°	Winter	154	151	182	96	164	99	103	27	24	8	6	8	11	7	35	44	29	N. 56 51 E.	.56	N. 23 E.	.14½	383
to 35° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 33 E.	.44	....	...	1388
26.	Spring	19	14	13	20	24	18	20	12	14	0	7	2	5	7	6	6	2	N. 82 4 E.	.36	S. 66 W.	.10	63
Lat. 21°	Summer	13	7	27	22	18	23	45	4	3	9	2	4	4	6	7	5	1	N. 89 49 E.	.45	S. ½ W.	.10	67
to 23° S.,	Autumn	6	9	10	22	21	13	28	7	4	1	0	0	0	0	4	11	3	N. 85 11 E.	.57	S. 53 E.	.20	46
long. 31°	Winter	6	34	22	14	16	6	10	13	5	2	1	1	0	1	6	8	7	N. 57 32 E.	.50	N. 9½ W.	.18	51
to 34° W.	The year[1]	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	N. 78 33 E.	.46	....	...	227

[1] Computed from the resultants for the seasons.

(Nos. 27 to 35.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
27.	Spring	38	19	13	20	15	17	12	14	13	1	8	0	7	7	6	18	5	N. 37° 59′ E.	.35	N. ½° W.	.16	71
Lat. 23°	Summer	27	27	20	8	16	17	36	12	3	2	4	0	1	2	8	12	0	N. 64 58 E.	.44	S. 16 E.	.10	65
to 25° S.,	Autumn	14	3	18	23	10	6	18	5	3	0	2	0	0	0	8	2	0	N. 69 17 E.?	.55	S. 60 E.	.16½	37
long. 31°	Winter	31	35	12	31	3	10	8	2	5	2	2	0	0	0	11	9	6	N. 39 17 E.	.57	S. 4 E.	.16½	58
to 34° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 53 37 E.	.46	....	...	231
28.	Spring	21	4	7	15	16	18	13	19	6	0	6	1	1	4	0	6	4	S. 88 12 E.?	.41	N. 73 W.	.07	47
Lat. 21°	Summer	3	0	8	12	8	27	28	3	14	5	4	0	6	5	2	5	4	S. 57 57 E.?	.47	S. 20 E.	.13	45
to 23° S.,	Autumn	7	9	23	7	19	12	32	7	9	0	5	0	3	0	7	1	1	S. 85 0 E ?	.50	S. 62 E.	.02	47
long. 29°	Winter	6	15	31	27	23	13	25	7	0	1	2	0	0	0	2	6	3	N. 74 55 E.	.66	N. 38½ E.	.26	54
to 31° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 7 E.	.48	....	...	193
29.	Spring	30	3	18	17	9	10	14	13	4	0	7	1	3	0	3	5	3	N. 64 34 E.?	.39	N. 56 W.	.05	47
Lat. 23°	Summer	15	7	17	13	8	14	28	3	14	3	10	0	5	3	6	6	1	S. 87 3 E.	.30	S. 32½ W.	.18	51
to 25° S.,	Autumn	6	4	22	21	13	6	20	4	7	3	5	0	0	3	6	3	0	N. 82 7 E.?	.47	S. 43 E.	.10	41
long. 29°	Winter	16	16	16	17	6	19	7	4	2	0	1	0	1	2	5	5	0	N. 55 15 E.	.56	N. 19 E.	.19	39
to 31° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 71 21 E.	.42	....	...	178
30.	Spring	76	29	43	52	88	62	102	50	38	14	28	10	16	5	40	48	28	N. 87 13 E.	.31	S. 72 W.	.19½	243
Lat. 20°	Summer	32	37	68	57	184	134	136	30	55	16	15	0	21	12	20	22	27	S. 18 14 E.	.54	S. 12½ E.	.17	289
to 25° S.,	Autumn	85	51	127	73	207	102	173	56	54	14	12	0	2	2	28	22	19	N. 89 48 E.	.56	S. 12 E.	.09½	342
long. 25°	Winter	132	118	128	157	253	54	55	15	6	3	3	0	3	15	21	45	12	N. 56 36 E.	.67	N. 12 E.	.30½	333
to 30° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 24 E.	.50	....	...	1207
31.	Spring	23	6	10	9	20	5	19	12	16	0	9	0	10	5	6	6	15	N. 88 38 E.	.21	N. 74½ W.	.21	58
Lat. 20°	Summer	17	5	16	11	42	30	63	13	16	5	13	3	7	6	9	4	1	S. 65 31 E.	.46	S. ½ W.	.14	87
to 25° S.,	Autumn	39	24	51	42	84	69	82	42	31	6	16	7	7	0	14	12	14	S. 81 30 E.	.49	S. 71½ E.	.07	180
long. 20°	Winter	19	15	22	25	51	33	38	8	11	6	0	0	1	0	9	13	10	N. 84 49 E.	.55	N. 52½ E	.17	87
to 25° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 82 50 E.	.42	....	...	412
32.	Spring	0	0	7	1	11	10	64	17	26	1	3	0	9	1	0	3	8	S. 36 58 E.	.67	S. 1 W.	.24	54
Lat. 20°	Summer	0	0	8	0	25	6	43	7	1	3	4	0	11	0	6	0	1	S. 54 21 E.?	.54	S. 44 E.	.04½	38
to 25° S.,	Autumn	17	10	7	2	22	4	22	5	6	1	4	8	1	0	2	5	0	N. 84 53 E.?	.34	N. 13 W.	.32½	39
long. 5°	Winter	17	0	11	6	43	35	131	23	22	9	0	1	14	1	6	13	16	S. 54 59 E.	.57	S. 54 E.	.07	116
to 20° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 55 9 E.	.50	....	...	247
33.	Spring	12	4	17	4	17	18	222	91	42	6	7	5	2	2	12	0	27	S. 39 0 E.	.70	N. 55 W.	.10	163
Lat. 20°	Summer	3	2	2	3	11	42	80	28	9	1	6	3	2	0	6	3	2	S. 47 12 E.	.72	N. ½ E.	.11	68
to 25° S.,	Autumn	0	0	2	1	5	5	138	47	15	4	2	1	0	0	0	0	3	S. 37 26 E.	.91	S. 11 E.	.12	74
long. 0°	Winter	3	1	6	5	25	27	271	108	27	4	4	1	7	0	0	1	4	S. 40 39 E.	.87	S. 32½ E.	.07	164
to 5° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 40 59 E.	.80	....	...	469
34.	Spring	4	2	4	7	14	26	442	233	86	25	25	14	21	14	21	5	15	S. 33 53 E.	.67	N. 6½ E.	.09	319
Lat. 20°	Summer	13	0	2	5	10	12	178	116	41	14	14	10	11	5	22	5	6	S. 27 38 E.	.65	N. 43½ W.	.10	155
to 25° S.,	Autumn	0	0	1	3	12	15	163	113	32	19	15	6	11	4	3	1	2	S. 27 36 E.	.80	S. 2 E.	.07	133
long. 0°	Winter	2	2	6	4	17	18	242	215	78	13	14	6	16	0	1	2	3	S. 28 54 E.	.83	S. 25 E.	.09	213
to 5° E.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 24 E.	.74	....	...	820
35.	Spring	0	0	1	5	2	3	37	24	30	6	12	5	7	2	13	5	16	S. 7 20 E.	.47	N. 22½ W.	.14	56
Lat. 20°	Summer	2	0	1	3	2	6	36	36	26	9	10	4	15	4	10	5	2	S. 5 29 E.	.51	N. 36 W.	.11	57
to 25° S.,	Autumn	1	0	0	0	0	0	19	39	17	7	6	1	7	3	0	0	0	S. 6 13 E.?	.70	S. 22½ E.	.10	35
long. 5°	Winter	0	0	0	3	3	0	44	35	24	2	8	2	2	0	0	0	1	S. 20 3 E.?	.79	S. 47½ E.	.21	46
to 15° E.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 10 40 E.	.61	....	...	194

[1] Computed from the resultants for the seasons.

(Nos. 36 to 39.) **Mozambique Channel and Indian Ocean,** longitude 36° to 55° east.

From observations for an aggregate period of over 8½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
36. Mozambique Channel, long. 36° to 40° E.	Spring	36	10	19	15	40	39	151	179	309	55	31	13	18	5	42	5	27	S. 17° 24′ E.	.60	S. 32° W.	.15
	Summer	52	16	34	18	87	44	117	146	296	53	56	14	25	11	7	8	51	S. 21 5 E.	.53	S. 57 W.	.08
	Autumn	1	2	26	10	29	12	23	16	46	5	4	4	3	2	1	0	0	S. 50 9 E.	.54	N. 56½ E.	.19
	Winter	4	0	11	7	13	5	15	14	21	16	8	2	1	1	2	2	3	S. 31 41 E.	.47	N. 10 W.	.06
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 37 E.	.53	....	...
37. Mozambique Channel, long. 40° to 45° E.	Spring	1	34	5	12	41	178	172	346	160	99	23	60	4	32	20	57	91	S. 24 25 E.	.56	S. 1 W.	.11
	Summer	3	26	21	47	9	57	65	123	45	84	27	24	3	15	6	18	15	S. 26 17 E.	.47	S. 44 W.	.04
	Autumn	0	21	5	13	20	27	13	26	17	23	5	11	0	6	0	8	9	S. 47 29 E.	.38	N. 19½ E.	.14
	Winter	6	8	4	10	4	31	26	40	11	17	19	8	2	4	3	5	14	S. 28 22 E.	.44	N. 69 W.	.03
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 30 30 E.	.46	....	...

[1] Computed from the resultants for the seasons.

(Nos. 38 and 39.) **Mozambique Channel and Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.
38. Indian Ocean, longitude 47° to 50° E.	Spring	21	107	86	60	84	79	37	30	8	28	5	11	4	13	2	4	15	N. 74° 39′ E.	.54	S. 72° W.	.05
	Summer	1	9	18	38	26	40	14	12	7	7	1	1	0	0	0	1	0	S. 83 52 E.	.71	S. 30½ E.	.27
	Autumn	13	49	55	37	6	30	2	23	2	3	0	10	1	3	3	5	4	N. 54 34 E.	.54	N. 40 W.	.21
	Winter	48	175	160	156	120	160	59	44	6	11	8	0	0	9	7	34	10	N. 67 19 E.	.66	N. 21½ E.	.11
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 27 E.	.59		
39. Indian Ocean, longitude 50° to 55° E.	Spring	12	43	31	87	65	94	49	56	26	41	10	6	15	19	4	20	17	S. 76 45 E.	.44	S. 55 W.	.15
	Summer	10	19	54	126	85	213	93	53	21	35	5	7	1	6	0	6	29	S. 74 59 E.	.68	S. 33 E.	.20
	Autumn	9	42	46	125	77	86	39	29	6	9	11	11	5	16	10	35	15	N. 78 36 E.	.53	N. 13½ W.	.13
	Winter	11	32	45	131	64	60	24	22	13	13	7	4	2	4	5	15	6	N. 80 1 E.	.62	N. 26 E.	.15
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 22 E.	.55		

[1] Computed from the resultants for the seasons.

(Nos. 40 to 43.) **Isle of Bourbon[1] and Mauritius.[1]**

Observed at the following places, viz.:—

Port Louis, Mauritius, by Charles Meldrum, during a period of 11 years—1853 to 1859 and 1861 to 1865 inclusive.

St. Dennis, Bourbon, during one year, date not preserved.

St. Paul, Bourbon, during one year, date not preserved.

St. Peter, Bourbon, during one year, date not preserved.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
40. St. Paul.	The year	1	95	12	3	5	145	48	37	19	S. 80° 53′ W.	.26	....	...	365
41. St. Peter.	The year	2	3	85	143	33	50	7	35	7	S. 40 45 E.	.51	....	...	365
42. St. Dennis.	The year	2	12	100	172	17	9	27	18	8	S. 56 31 E.	.60½	....	...	365
43. Port Louis.[2] 1853 to 1859.	January	2	6	12	6	1	1	1	2	0					
	February	1	3	7	9	0	1	2	5	0					
	March	1	4	11	9	1	1	1	3	0					
	April	1	4	12	9	0	1	1	2	0					
	May	1	2	9	13	2	1	1	2	0					
	June	1	1	9	12	3	1	1	1	1					
	July	1	0	9	16	2	0	1	1	1					
	August	1	1	10	15	1	0	1	2	0					
	September	1	2	9	12	2	0	2	2	0					
	October	1	2	13	11	1	0	1	2	0					
	November	2	4	11	5	1	1	2	4	0					
	December	2	5	13	4	1	0	2	3	1					
	Spring	3	10	32	31	3	3	3	7	0	S. 76 43 E.	.57	N. 77° E.	.04	
	Summer	3	2	28	43	6	1	3	4	2	S. 60 44 E.	.66½	S. 16 E.	.20	
	Autumn	4	8	33	28	4	1	5	8	0	S. 78 58 E.	.53	S. 44 W.	.02	
	Winter	5	14	32	19	2	2	5	10	1	N. 83 2 E.	.47	N. 16½ W.	.19	
	The year	15	34	125	121	15	7	16	29	3	S. 76 37 E.	.54			

[1] In a paper on the Meteorology of Bourbon, by Mailland, published in the Annuaire de la Société Méteorologique of France, for January, 1862, he intimates that the observations at St. Paul should be rejected on account of its local position on the leeward side of the island; and remarks, in regard to Port Louis, that its position on the island of Mauritius is precisely similar to that of St. Paul on the Isle of Bourbon, and that, therefore, it would be an error to judge of the meteorology of the whole island from observations made at Port Louis. Bourbon is a volcanic island, of elliptical form, 38 miles long and 28 wide, and is traversed from north to south by a chain of mountains that rise at some points to the height of near 10,000 feet. The interior of Mauritius is mountainous, but the mountains are not so high.

[2] For the first six years only. Mr. Meldrum's observations for the last nve years are as follows, viz.:—

North	69	East	1280	South	39	West	111	Variable	98
N. N. E.	47	E. S. E.	1803	S. S. W.	25	W. N. W.	176	Calm	1076
N. E.	73	S. E.	1203	S. W.	32	N. W.	149	Total	7300
E. N. E.	494	S. S. E.	454	W. S. W.	62	N. N. W.	109		

Hence the direction of the resultant for this latter series is about E. S. E., and its ratio to the sum of the winds about .53, scarcely differing from the series computed above.

(Nos. 44 to 53.) **Indian Ocean,** longitude 55° to 115° east.

From observations for an aggregate period of over 20 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
44. Long. 55° to 60° E.	Spring	6	54	94	167	159	170	47	67	33	34	9	14	6	19	9	30	13	S. 89° 7′ E.	.58	N. 65° W.	.06	310
	Summer	3	15	25	109	166	319	114	74	34	34	13	19	8	8	7	15	16	S. 67 55 E.	.69	South.	.20	326
	Autumn	10	54	64	231	169	238	64	46	18	0	8	2	2	18	7	17	37	N. 88 31 E.	.69	N. 41 E.	.08	328
	Winter	26	55	70	258	146	150	39	41	26	23	7	4	5	10	12	32	22	N. 81 16 E.	.64	N. $1\frac{1}{2}$ W.	.14	309
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 86 33 E.	.64	....	...	1273
45. Long. 60° to 65° E.	Spring	12	4	28	69	215	202	192	67	51	23	10	10	10	6	8	6	20	S. 64 44 E.	.71	N. $53\frac{1}{2}$ E.	.04	311
	Summer	5	0	14	21	102	126	216	95	59	23	26	13	9	8	4	3	0	S. 46 18 E.	.72	S. 27 W.	.19	241
	Autumn	9	1	17	26	147	153	184	73	53	12	7	1	6	3	9	4	31	S. 58 15 E.	.73	S. 13 E.	.06	245
	Winter	36	27	61	127	352	207	226	57	39	31	14	3	10	3	17	25	43	S. 77 46 E.	.67	N. $14\frac{1}{2}$ E.	.19	426
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 61 27 E.	.69	....	...	1223
46. Long. 65° to 70° E.	Spring	11	10	17	49	180	170	206	79	45	12	12	3	18	7	11	9	12	S. 61 45 E.	.70	N. 45 E.	03	284
	Summer	7	1	9	10	69	78	145	34	36	3	14	5	7	4	5	0	9	S. 51 42 E.	.71	S. 23 W.	.10	145
	Autumn	7	2	12	20	76	117	173	64	41	9	9	5	7	3	3	3	16	S. 52 5 E.	.74	S. $4\frac{1}{2}$ W.	.10	189
	Winter	15	15	50	154	355	278	230	82	38	4	14	7	6	8	19	8	63	S. 73 20 E.	.65	N. $9\frac{1}{2}$ E.	$.16\frac{1}{2}$	449
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 59 20 E.	.69	....	...	967
47. Long. 70° to 75° E.	Spring	8	8	13	31	102	102	135	33	19	3	6	2	3	1	5	2	1	S. 65 35 E.	.76	N. 48 E.	.14	158
	Summer	0	0	0	0	12	18	61	15	20	7	8	5	14	1	0	0	1	S. 32 29 E.	.72	S. $45\frac{1}{2}$ W.	$.29\frac{1}{2}$	51
	Autumn	6	4	2	11	27	39	81	27	11	3	2	2	2	2	4	2	2	S. 54 59 E.	.71	S. 53 W.	.02	76
	Winter	11	10	42	64	266	212	229	54	28	0	4	1	3	4	19	7	11	S. 72 13 E.	.77	N. $40\frac{1}{2}$ E.	.21	322
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 49 E.	.72	....	...	607
48. Long. 75° to 80° E.	Spring	7	1	24	17	70	52	63	18	11	8	7	2	1	4	4	2	1	S. 69 54 E.	.67	N. 1 W.	.14	97
	Winter	10	8	39	37	151	121	168	19	13	3	2	1	3	3	6	3	8	S. 73 3 E.	.77	N. 36 E.	.17	198
49. Long. 80° to 85° E.	Spring	1	3	7	6	53	43	40	14	12	3	0	1	0	1	1	0	2	S. 65 43 E.	.79	N. 63 E.	.10	62
	Winter	0	0	1	19	77	59	93	12	7	1	2	1	3	1	1	1	0	S. 65 2 E.	.85	N. $87\frac{1}{2}$ E.	.14	93
50. Long. 75° to 85° E.	Summer	0	0	7	9	24	33	69	33	9	10	7	3	3	4	4	1	8	S. 46 24 E.	.66	S. 60 W.	$.17\frac{1}{2}$	75
	Autumn	2	1	3	5	74	54	83	32	14	15	2	3	1	0	0	1	13	S. 55 24 E.	.76	S. 2 W.	.06	101
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 5 E.	.73	....	...	626
51. Long. 85° to 100° E.	Spring	0	3	12	23	78	67	65	26	8	5	4	0	1	2	2	2	0	S. 68 9 E.	.78	N. $63\frac{1}{2}$ E.	.13	99
	Summer	1	1	5	6	18	14	23	5	5	5	8	0	0	1	1	0	4	S. 56 29 E.?	.61	N. $6\frac{1}{2}$ W.	.10	32
	Autumn	3	4	5	8	60	60	94	31	35	9	21	3	3	4	13	4	8	S. 48 14 E.	.62	S. 67 W.	.16	122
	Winter	1	1	7	26	90	65	117	23	21	2	2	0	2	0	3	2	5	S. 63 24 E.	.80	S. $84\frac{1}{2}$ E.	.10	122
	The year[1]	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	S. 59 55 E.	.70	....	...	375
52. Long. 105° to 110° E.	Spring	27	7	57	50	134	169	611	370	142	54	47	15	33	7	24	6	24	S. 41 E.	.71	N. 59 E.	.16	593
	Summer	42	11	26	33	72	169	280	175	86	56	56	12	18	11	8	10	12	S. 44 17 E.	.70	N. 54 E.	.20	359
	Autumn	8	0	0	8	9	6	90	66	50	7	29	12	9	2	5	0	10	S. 17 51 E.	.65	S. $88\frac{1}{2}$ W.	.13	104
	Winter	0	0	4	0	1	18	68	89	94	16	23	8	1	1	1	0	6	S. 10 57 E.	.81	S. $45\frac{1}{2}$ W.	.25	110
	The year[1]	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	S. 28 4 E.	.70	....	...	1166
53. Long. 110° to 115° E.	Spring	14	10	33	20	81	107	405	333	266	72	49	15	24	13	11	20	49	S. 28 49 E.	.69	S. $89\frac{1}{2}$ E.	.20	508
	Summer	50	15	89	61	120	148	457	150	184	84	65	23	46	17	31	1	37	S. 41 28 E.	.55	N. 50 E.	.30	526
	Autumn	2	0	3	0	1	1	39	39	97	29	21	10	6	6	11	1	15	S. 52 30 W.	.68	N. 74 W.	.69	94
	Winter	0	0	0	0	3	7	23	27	55	37	32	5	19	3	3	0	1	S. 10 44 W.	.73	S. 67 W.	.28	72
	The year[1]	...	⋮	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 11 59 E.	.62	....	...	1200

[1] Computed from the resultants for the seasons.

(Nos. 54 to 57.) **New Caledonia and Pacific Ocean,** west of longitude 180°.

Observed at the following places, viz.:—

At Sea, for an aggregate period of 470 days, collected and classified at the United States Naval Observatory, under the direction of Capt. M. F. Maury Superintendent.

Port of France, New Caledonia, by Dr. Proust.

(Nos. 54 to 57.) **New Caledonia and Pacific Ocean.**—*Continued.*

Time of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
54. At sea, long. 150° to 165° E.	Spring	4	5	5	7	40	21	86	24	7	7	6	0	1	0	5	0	10	S. 55° 19′ E.	.70	S. 32° E.	.19	76
	Summer	1	0	9	4	19	6	25	21	8	2	36	0	23	10	5	0	8	S. 88 21 W.	.33	N. 74 W.	.84	59
	Autumn	1	5	22	20	36	11	24	0	3	4	10	2	0	4	0	0	0	S. 86 49 E.?	.58	N. 27 E.	.22	48
55. Port of France.	Spring	0	0	2	0	5	149	148	0	3	1	0	0	0	0	5	0	147	S. 56 42 E.	.64	S. 85 E.	.16	
	Summer	3	0	0	0	3	71	89	0	6	0	9	0	25	0	17	0	237	S. 48 39 E.	.29½	N. 46 W.	.20	
	Autumn	10	0	0	0	11	0	213	0	5	0	4	0	6	0	33	0	173	S. 46 0 E.	.37	N. 53 W.	.12	
	Winter	0	0	1	0	17	0	275	0	46	0	6	0	5	0	0	0	100	S. 39 45 E.	.71	S 23½ E.	.23	
	The year	13	0	3	0	36	220	725	0	60	1	19	0	36	0	55	0	657	S. 47 9 E.	.49			
56. At sea, long. 165° E. to 180°	Spring	8	4	13	40	65	10	38	11	0	4	3	0	3	2	4	0	3	S. 87 36 E.	.68	N. 44½ E.	.31	70
	Summer	8	8	16	20	60	43	44	14	24	10	17	9	7	2	2	3	20	S. 56 13 E.	.44	S. 85½ W.	.11	103
	Autumn	12	0	4	9	24	17	50	1	3	3	5	4	6	0	4	3	8	S. 66 26 E.	.48½	N. 32 W.	.05	51
57. At sea, long. 150° E. to 180°	Winter	2	0	9	17	13	21	76	13	14	0	0	0	0	0	8	4	10	S. 59 3 E.	.66	S. 42½ E.	.14	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 63 9 E.	.53	....	...	470

[1] Computed from the resultants for the seasons.

ZONE No. 24.

LATITUDE 25° TO 30° SOUTH.

The data for the study of the winds of this zone consist of observations made at 5 stations on land, for an aggregate period of 5 years 3 months; at sea for over 61 years. The distribution is as follows:—

Where observed.	No. Stations.	Aggregate length of time.
Pacific Ocean,	....	12 years 6 months.
South America,	2	11 months.
Atlantic Ocean,	....	18 years 6 months.
Africa,	1	2 years.
Indian Ocean,	....	over 30 years.
Australia,	2	2 years 4 months.

(Nos. 1 to 21.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of 10 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Long. 175° W. to 180°.	Spring	21	11	78	34	164	112	110	64	158	30	60	20	47	1	19	13	10	S. 47° 56′ E.	.45	S. 33½°E.	.02	317
	Summer	19	5	37	35	74	23	48	13	19	17	64	20	34	9	10	2	4	S. 39 4 E.	.20	N. 60 W.	.21	144
	Autumn	12	2	17	33	92	59	75	37	32	37	40	18	24	18	9	5	2	S. 43 55 E.	.43	S. 13 W.	.02	171
	Winter	30	23	38	41	176	204	228	52	56	42	46	5	41	1	17	13	32	S. 59 33 E.	.56	S. 82 E.	.17	349
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 49 50 E.	.40½	....	...	981
2. Long. 170° to 175° W.	Autumn	31	4	25	19	65	31	52	17	17	7	18	14	22	1	11	1	30	S. 72 2 E.	.33	N. 22 E.	.35	122

[1] Computed from the resultants for the seasons.

(Nos. 3 to 21.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
3. Long. 165° to 175° W.	Spring	15	8	5	15	28	19	51	7	33	8	23	15	32	3	4	10	7	S. 22° 17′ E.	.25	S. 31 ½° W.	.08	95
	Summer	34	0	18	2	15	1	0	8	19	7	20	21	29	16	8	0	2	N. 85 46 W.	.25	N. 65 W.	.42	70
	Winter	8	2	24	11	37	33	73	10	22	5	21	8	13	5	1	2	11	S. 52 30 E.	.47½	S. 61 E.	.27	96
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 41 22 E.	.21	....	...	439
4. Long. 165° to 170° W.	Autumn	13	1	16	6	32	15	25	5	15	4	12	6	4	0	6	0	6	S. 66 23 E.	.38½	....	...	56
5. Long. 160° to 165° W.	Spring	12	4	15	5	23	31	66	1	9	4	6	11	21	5	22	5	7	S. 61 51 E.	.26	N. 33 E.	.04	82
	Autumn	29	7	38	16	55	48	59	17	42	23	57	13	16	3	8	0	7	S. 43 57 E.	.35	S. 19 E.	.10	146
	Winter	15	5	15	24	52	35	44	11	23	6	12	7	13	0	14	5	11	S. 70 17 E.	.41	N. 86 E.	.18	97
6. Long. 150° to 165° W.	Summer	10	7	13	17	19	13	11	6	25	27	47	21	37	11	10	6	17	S. 39 58 W.	.27	S. 82 W.	.39	99
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 16 E.	.26	....	...	1070
7. Long. 155° to 160° W.	Spring	21	5	23	5	61	33	34	16	15	6	14	5	16	4	8	5	15	S. 74 15 E.	.37	N. 71½ E.	.15	95
	Autumn	20	10	36	14	47	32	76	17	28	17	24	8	8	0	3	10	26	S. 61 17 E.	.41	S. 73½ E.	.15	125
	Winter	12	14	32	17	47	42	82	23	29	11	19	9	20	1	18	5	21	S. 59 19 E.	.39	S. 68 E.	.13	134
8. Long. 150° to 155° W.	Spring	10	4	12	9	42	24	35	11	10	3	22	10	6	0	24	9	15	S. 66 47 E.	.26	N. 29½ E.	.06	82
	Autumn	5	9	33	37	50	24	31	13	10	5	10	6	8	0	8	4	2	S. 88 58 E.	.51	N. 67 E.	.32½	85
	Winter	28	13	25	27	58	30	66	15	16	6	15	7	10	9	18	6	23	S. 82 40 E.	.36	N. 54 E.	.18	124
9. Long. 120° to 150° W.	Spring	45	26	65	26	102	42	50	27	25	13	15	18	27	14	43	26	19	N. 70 40 E.	.28	S. 46 E.	.05	194
	Summer	12	17	21	1	4	1	7	3	5	0	13	11	8	1	12	11	4	N. 12 17 W.?	.28	N. 62½ W.	.32½	44
	Autumn	7	8	6	9	23	7	22	7	9	1	3	0	1	1	7	0	2	S. 80 8 E.?	.48	S. 50 E.	.32	38
	Winter	26	28	36	28	42	17	29	12	14	4	6	3	15	6	37	18	27	N. 48 52 E.	.32	N. 6½ E.	.09	116
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 58 E.	.26	....	...	392
10. Long. 105° to 120° W.	Spring	12	3	2	3	11	15	24	27	12	0	0	0	0	5	4	0	4	S. 53 1 E.?	.51	N. 68 E. [2]	.36	41
11. Long. 100° to 120° W.	Autumn	6	12	0	14	15	27	16	15	4	8	3	0	0	8	7	10	6	S. 80 4 E.	.36	N. 37 E. [2]	.67	50
12. Long. 100° to 115° W.	Summer	6	0	8	12	0	6	17	9	6	9	16	4	1	9	3	8	6	S. 13 8 E.?	.18	N. 6 W. [2]	.46	40
13. Long. 90° to 115° W.	Winter	12	12	10	27	22	40	28	17	5	1	0	0	1	3	8	8	12	S. 88 56 E.	.53	N. 47 E. [2]	.63	69
14. Long. 90° to 105° W.	Spring	0	15	0	8	8	3	25	14	0	17	0	0	0	1	3	15	9	S. 65 50 E.?	.29	N. 31 E. [2]	.28	39
14(*a*). Long. 70° to 120° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 9 3 E.	.45	....	...	769
15. Long. 85° to 100° W.	Summer	6	2	15	8	1	23	14	34	6	15	27	11	9	9	2	2	14	S. 8 14 E.	.33	N. 12 W. [2]	.12	66
16. Long. 80° to 95° W.	Autumn	0	3	0	3	0	6	15	18	26	16	10	1	1	3	0	0	12	S. 7 7 E.?	.64	S. 2 E. [2]	.19	38
17. Long. 80° to 90° W.	Spring	0	5	15	2	5	6	3	44	8	7	2	8	12	7	4	9	18	S. 12 35 E.	.22	N. 7 W. [2]	.23	52
	Winter	6	6	2	0	0	6	32	46	30	43	3	3	10	0	0	4	18	S. 7 38 E.	.59	S. 3 E. [2]	.14	70
18. Long. 75° to 80° W.	Spring	0	8	0	4	0	0	1	61	13	49	3	3	0	17	0	8	3	S. 6 55 W.	.57	S. 47½ W. [2]	.18	57
	Winter	0	0	0	0	3	18	3	95	30	60	9	3	2	5	3	6	8	S. 4 45 E.	.74	S. 2 W. [2]	.29	82
19. Long. 70° to 85° W.	Summer	0	0	0	0	5	4	3	10	34	33	13	2	0	3	0	0	10	S. 7 48 W.?	.75	S. 29½ W. [2]	.35	39
20. Long. 70° to 80° W.	Autumn	3	0	0	0	0	0	5	34	27	40	5	3	0	3	0	5	0	S. 5 52 W.?	.76	S. 25 W. [2]	.35	42
21. Long. 70° to 75° W.	Spring	0	1	3	0	0	1	0	15	12	49	3	16	0	4	0	11	0	S. 27 52 W.?	.64	S. 19 W. [2]	.39	38
	Winter	0	0	0	0	0	0	0	9	51	45	12	8	3	2	3	6	0	S. 20 31 W.?	.80	S. 41 W. [2]	.60	46

Relative Prevalence of Winds from the Different Points of the Compass.

[1] Computed from the resultants for the seasons.

[2] These apparent deflections from longitude 70° to longitude 120° W. are due, perhaps, less to monsoon influences, properly so called, than to difference of distance from the South American coast; the mean resultant for the year with which those for these seasons are all compared being that for the entire area included between the meridians just named.

(Nos. 23 and 24.) **Northern Chili and Southern Paraguay, South America.**

Observed at the following places, viz.:—

Chanacillo, Chili, from November, 1858, to March, 1859, inclusive.

Assumption, Paraguay, by E. A. Hopkins, from March to August, inclusive, in the year 1854, and reported to the Smithsonian Institution.

Place and kind of observations.		Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.
23. Assumption, Paraguay. Surface wind.	No. of obs.	Spring	46	52	45	63	37	12	7	13	1	N. 88° 55′ E.	.37
		Summer	26	36	101	45	29	6	15	6	7	S. 86 2 E.	.50
	No. of miles.	Spring	228	303	162	414	296	44	10	76	...	S. 81 52 E.	.38
		Summer	260	366	442	267	153	20	56	22	...	N. 12 31 E.	.52
	Mean velocity.[1]	Spring	4.96	5.83	3.60	6.57	8.00	3.67	1.43	5.85			
		Summer	10.00	10.17	4.38	5.93	5.28	3.33	3.73	3.67			
	Motion of clouds.	Spring	15	22	18	20	18	12	3	15	...	N. 88 30 E.	.17½
		Summer	9	14	28	9	6	4	4	2	...	N. 81 55 E.	.49
24. Chanacillo, Chili.		January	0	3	5	15	2	112	0	0	0		
		February	1	12	5	13	5	87	5	1	0		
		March	1	22	3	12	8	86	1	5	1	S. 33 26 W.	.49
		November	4	3	7	7	14	17	8	3	0	S. 19 18 W.	.38
		December	1	5	2	7	8	76	2	2	0		
		Winter	...	...	...	...	...	...	...	...	...	S. 35 0 W.	.71½

[1] In miles per hour.

(Nos. 25 to 37.) **Atlantic Ocean.**

From observations for an aggregate period of 18½ years, collected and classified, from the logs of different sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent, as follows, viz.:—

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influence. Direction.	Force.	Number of days.
25. Long. 45° to 50° W.	Spring	27	16	49	19	53	29	48	29	34	14	37	11	15	6	26	5	15	S. 68° 9′ E.	.25	S. 47° W.	.08	144
	Summer	15	21	29	16	20	9	23	12	23	8	19	10	13	6	12	7	3	S. 89 46 E.	.15	N. 74½ W.	.14½	82
	Autumn	16	9	33	9	33	10	32	17	22	11	14	5	7	3	9	1	0	S. 69 32 E.	.33	S. 15½ E.	.08	77
	Winter	26	41	66	13	36	22	52	27	24	5	6	3	1	1	5	2	12	N. 84 0 E.	.48	N. 65 E.	.21	114
	The year[1]	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	S. 82 17 E.	.29	....	...	417
26. Long. 40° to 45° W.	Spring	73	54	61	43	90	44	74	36	39	36	61	17	33	17	27	22	13	N. 88 19 E.	.21	S. 57 W.	.05	247
	Summer	50	48	95	36	54	20	36	13	58	22	33	14	28	11	30	15	4	N. 60 49 E.	.23	N. 37 W.	.10	189
	Autumn	26	34	83	51	40	22	41	31	51	20	29	17	14	9	22	5	6	S. 88 44 E.	.28	S. 33 E.	.05	167
	Winter	81	64	124	36	72	43	116	46	59	25	33	11	14	14	16	20	15	N. 84 26 E.	.34	S. 88 E.	.08	263
	The year[1]	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 58 E.	.26	....	...	866
27. Long. 35° to 40° W.	Spring	93	66	62	21	55	29	85	20	64	16	84	20	38	6	49	24	19	N. 66 20 E.	.10	S. 38 W.	.19	250
	Summer	100	86	108	41	39	10	23	15	19	12	25	18	9	7	23	20	3	N. 32 14 E.	.47	N. 10 E.	.22	186
	Autumn	32	44	78	19	42	24	47	36	33	33	52	21	16	12	16	9	6	S. 74 48 E.	.18	S. 10 W.	.24	173
	Winter	82	79	139	29	49	15	45	19	19	6	3	8	19	0	26	24	6	N. 42 8 E.	.52	N. 34½ E.	.23	189
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 48 3 E.	.29	....	...	798
28. Long. 30° to 35° W.	Spring	35	55	65	71	80	34	90	29	26	16	48	13	25	5	30	25	21	N. 83 54 E.	.31	S. 22 E.	.12	223
	Summer	70	37	54	31	75	51	80	25	33	14	47	21	15	5	44	21	6	N. 82 27 E.	.25	S. 11½ W.	.11	210
	Autumn	84	31	72	37	53	15	46	16	26	19	37	10	17	5	12	17	9	N. 57 48 E.	.29	N. 71 W.	.03	169
	Winter	143	88	103	50	72	39	55	3	14	7	11	6	8	19	49	58	51	N. 38 27 E.	.46	N. 3½ E.	.21	259
	The year[1]	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	N. 61 52 E.	.31	....	...	861
29. Long. 25° to 30° W.	Spring	84	34	51	33	57	32	68	18	25	5	8	3	19	1	30	23	18	N. 59 47 E.	.37	N. 45 E.	.01	170
	Summer	77	34	99	62	118	45	111	26	29	21	41	13	36	13	65	23	11	N. 70 58 E.	.30	S. 19½ W.	.07½	275
	Autumn	71	35	84	52	110	42	66	33	31	19	18	5	10	15	34	23	15	N. 72 38 E.	.39	S. 44½ E.	.07½	221
	Winter	95	57	103	62	105	59	59	5	13	7	13	12	13	15	81	58	39	N. 41 3 E.	.43	N. 9 W.	.15	265
	The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 5 E.	.36	....	...	931

[1] Computed from the resultants for the seasons.

(Nos. 30 to 37.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
30. Long. 20° to 25° W.	Spring	60	8	43	11	20	5	19	8	11	2	13	2	5	6	24	21	5	N. 23° 10′ E.	.39	N. 21° W.	.16	88
	Summer	58	19	63	37	53	27	32	27	50	17	38	9	16	11	54	32	7	N. 56 24 E.	.17	S. 28½ W.	.14	123
	Autumn	81	24	92	45	62	43	57	32	79	42	44	14	14	11	40	48	24	N. 81 5 E.	.19	S. 7 W.	.19	251
	Winter	56	57	78	53	49	21	28	14	11	6	8	1	11	5	27	31	9	N. 43 58 E.	.51	N. 44 E.	.21	155
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 44 3 E.	.30	....	...	677
31. Long. 15° to 20° W.	Spring	12	8	15	8	16	5	7	6	3	7	8	2	3	3	18	13	5	N. 26 22 E.?	.25	N. 22 W.	.20	46
	Summer	29	13	26	14	12	5	36	21	30	16	29	4	63	1	18	14	7	S. 53 22 E.	.14	S. 31 W.	.14	94
	Autumn	56	10	35	27	46	28	48	49	55	33	27	8	12	5	24	24	10	S. 59 39 E.	.23	S. 3½ W.	.16	166
	Winter	7	8	21	9	22	12	9	7	7	4	7	0	2	1	7	15	3	N. 68 45 E.?	.37	N. 59½ E.	.18	47
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 6 E.	.19	....	...	353
32. Long. 5° to 15° W.	Spring	22	1	16	10	5	1	26	4	13	1	14	9	21	4	8	4	0	S. 77 44 W.	.02	N. 20 W.	.18	53
	Summer	15	7	11	0	4	2	20	9	15	10	20	2	7	0	8	10	1	S. 7 31 W.?	.13	N. 51 W.	.07½	47
	Autumn	16	0	2	3	10	4	23	25	22	17	3	7	13	3	4	4	8	S. 8 29 E.	.35	S. 3 E.	.17	55
	Winter	10	6	13	4	9	11	43	21	24	15	6	0	11	6	13	9	13	S. 33 51 E.	.28	S. 63 E.	.13	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 13 16 E.	.18	....	...	226
33. Long. 0° to 5° W.	Spring	15	3	7	4	4	9	25	7	8	2	4	1	5	1	0	8	4	N. 53 39 E.?	.13	N. 15 W.	.51	39
	Winter	2	0	12	3	8	10	80	13	16	6	11	1	6	13	19	7	17	S. 34 27 E.	.36	N. 16 W.	.12	75
34. Long. 5° W. to 5° E.	Summer	7	0	1	1	3	2	28	33	15	4	3	1	1	3	2	6	1	S. 25 36 E.?	.56	S. 1 E.	.09	37
	Autumn	5	6	10	2	7	3	49	25	17	11	8	1	5	0	1	2	1	S. 33 57 E.	.56	S. 55½ E.	.09	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 29 59 E.	.48	....	...	423
35. Long. 0° to 5° E.	Spring	16	9	5	3	14	17	100	83	23	14	17	5	14	4	6	1	3	S. 30 9 E.	.58	S. 31 E.	.08	111
	Winter	13	0	0	3	7	8	98	81	44	11	21	6	11	2	20	5	0	S. 19 7 E.	.60	S. 11½ W.	.13	110
36. Long. 5° to 10° E.	Spring	15	1	14	3	8	11	246	261	135	33	57	23	29	11	27	21	12	S. 16 14 E.	.65	N. 88 E.	.12	302
	Summer	16	2	12	4	12	12	89	106	65	39	45	22	41	26	38	22	14	S. 7 7 W.	.41	N. 27 W.	.24	188
	Autumn	0	0	2	0	4	4	84	83	82	54	45	12	20	6	11	0	0	S. 0 39 E.	.72	S. 30 W.	.11	136
	Winter	2	0	2	2	10	5	124	229	162	51	47	27	29	2	12	2	12	S. 8 3 E.	.76	S. 19 E.	.13	239
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 5 38 E.	.63	....	...	865
37. Long. 10° to 15° E.	Spring	7	1	1	1	2	1	53	77	52	19	40	19	26	15	15	11	7	S. 11 25 W.	.52	S. 67 E.	.12	116
	Summer	7	0	3	0	8	2	30	27	47	17	32	16	27	17	29	8	2	S. 34 15 W.	.42	N. 15 W.	.11	90
	Autumn	3	0	1	0	2	0	15	26	39	15	15	15	17	6	12	9	0	S. 26 54 W.	.52	S. 81 W.	.02	58
	Winter	1	0	4	0	0	0	11	45	45	16	24	11	35	6	18	0	2	S. 27 46 W.	.58	S. 46 W.	.07	73
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 24 44 W.	.51	....	...	337

[1] Computed from the resultants for the seasons.

(No. 38.) **Natal, Southern Africa.**

Observed at Pieter Maritzburg, during the years 1858 and 1859.

Time of the year.	North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.
January	2	2	9	10	3	1	1	3	0				
February	2	2	8	9	2	2	1	2	0				
March	1	1	10	6	4	2	3	4	0				
April	2	1	11	6	5	2	2	1	0				
May	2	4	10	6	1	3	2	3	0				
June	4	2	8	5	2	2	4	3	0				
July	2	3	6	4	3	4	2	6	1				
August	3	1	6	8	3	2	2	6	0				
September	1	1	7	12	2	2	2	3	0				
October	2	3	9	10	1	2	1	3	0				
November	3	3	7	10	2	1	1	3	0				
December	1	2	9	9	4	2	1	3	0				
Spring	5	6	31	18	10	7	7	8	0	S. 67° 11′ E.	.36	S. 47° E.	.01
Summer	9	6	20	17	8	8	8	15	1	S. 81 20 E.	.13	N. 60 W.	.22
Autumn	6	7	23	32	5	5	4	9	0	S. 67 0 E.	.44	S. 63 E.	.19
Winter	5	6	26	28	9	5	3	8	0	S. 65 17 E.	.46½	S. 57½ E.	.12
The year	25	25	100	95	32	25	22	40	1	S. 68 34 E.	.34½		

(Nos. 39 to 53.)

Indian Ocean.

From observations for an aggregate period of over 30 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
39. Longitude 31° to 35° E.	Spring	7	28	10	32	22	38	26	47	46	58	13	17	0	3	4	13	7	S. 33° 56′ E.	.40	S. 12½° W.	.14	124
	Summer	22	66	36	72	14	25	27	68	34	42	21	16	4	7	3	72	13	N. 78 54 E.	.21	N. 11 W.	.24	181
	Autumn	0	6	8	8	4	19	4	7	5	9	5	4	0	1	1	4	5	S. 60 49 E.?	.36	N. 73 E.	.06	30
	Winter	1	11	6	14	6	16	6	9	17	22	5	3	2	2	0	2	0	S. 50 45 E.?	.40	S. 45½ E.	.08	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 52 14 E.	.32	....	...	376
40. Longitude 35° to 40° E.	Spring	32	88	53	131	103	174	129	152	113	115	44	47	17	25	19	97	67	S. 57 27 E.	.33	S. 19 E.	.02	469
	Summer	92	142	91	201	105	210	143	223	138	215	71	63	35	35	29	193	80	S. 47 4 E.	.16	N. 75 W.	.06	689
	Autumn	26	66	42	50	35	62	25	62	23	48	29	16	2	9	14	28	27	S. 83 21 E.	.27	N. 1 W.	.12	188
	Winter	3	27	21	85	45	73	55	103	43	54	13	7	6	4	9	18	25	S. 54 41 E.	.49	S. 44½ E.	.19	197
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 31 E.	.31	....	...	1543
41. Longitude 40° to 45° E.	Spring	18	52	84	237	236	363	178	237	65	156	79	83	19	54	29	75	56	S. 59 45 E.	.44	S. 4 E.	.08	674
	Summer	28	77	73	199	108	173	71	122	55	122	43	69	16	53	14	59	50	S. 60 33 E.	.34	S. 69½ E.	.08	444
	Autumn	18	72	49	164	79	111	52	72	47	88	33	34	13	57	21	49	32	S. 79 52 E.	.28	N. 48 W.	.13	330
	Winter	20	59	62	248	179	218	84	94	69	64	22	28	6	24	8	34	14	S. 79 17 E.	.54	N. 77 E.	.16	411
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	S. 70 2 E.	.40	....	...	1859
42. Longitude 45° to 50° E.	Spring	38	163	171	239	218	362	104	151	73	160	38	89	33	61	20	44	35	S. 79 5 E.	.41	S. 15 W.	.13	666
	Summer	18	73	108	175	100	126	71	66	29	57	13	42	23	32	7	31	12	N. 88 48 E.	.43	S. 7½ W.	.04	324
	Autumn	41	161	108	207	64	64	46	63	49	72	27	35	11	30	26	56	21	N. 65 5 E.	.36	N. 48 W.	.14	360
	Winter	65	157	214	441	260	249	97	97	42	51	18	16	13	25	18	56	26	N. 77 35 E.	.61	N. 26½ E.	.18	615
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	N. 83 1 E.	.44	....	...	1965
43. Longitude 50° to 55° E.	Spring	28	81	93	211	110	143	60	66	55	49	30	38	26	29	23	44	36	N. 86 56 E.	.39	S. 45 W.	.05	374
	Summer	10	32	36	64	41	81	52	40	24	19	7	11	8	16	12	25	10	S. 81 0 E.	.42	S. 6 W.	.12	163
	Autumn	35	86	74	133	45	103	25	46	13	27	15	14	14	25	20	36	27	N. 66 59 E.	.42	N. 20 W.	.12	246
	Winter	58	120	150	338	167	274	80	89	51	45	17	30	6	38	37	79	32	N. 79 6 E.	.52	N. 56½ E.	.09	537
	The year[1]	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	..	N. 82 26 E.	.43	....	...	1320
44. Longitude 55° to 60° E.	Spring	10	31	34	122	63	74	34	34	18	22	12	14	10	20	12	21	17	N. 87 56 E.	.44	N. 56 E.	.02½	183
	Summer	4	11	11	17	28	54	16	15	13	25	1	3	7	6	2	8	4	S. 64 58 E.	.45	S. 3½ W.	.19	75
	Autumn	19	33	25	59	29	56	28	35	10	17	8	10	5	23	11	45	0	N. 77 11 E.	.33	N. 54 W.	.12	134
	Winter	34	92	94	243	127	199	42	52	14	37	13	19	6	14	34	41	64	N. 77 47 E.	.54	N. 46 E.	.15½	375
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 38 E.	.42	....	...	767
45. Longitude 60° to 65° E.	Spring	11	15	6	13	50	23	24	6	7	8	9	5	1	1	14	5	0	N. 88 42 E.	.44	S. 47 E.	.19	69
	Winter	30	13	42	44	151	77	98	26	25	9	17	3	12	9	30	11	32	S. 81 39 E.	.50	S. 42 E.	.29	210
46. Longitude 65° to 70° E.	Winter	10	2	7	19	82	29	77	9	16	2	3	3	4	2	3	3	3	S. 69 34 E.	.68	S. 41½ E.	.05	91
47. Longitude 60° to 75° E.	Summer	5	2	2	6	10	4	21	17	13	10	21	7	13	6	9	7	7	S. 12 18 W.	.29	S. 39½ W.	.06	53
	Autumn	26	6	17	10	18	32	33	18	23	6	11	6	15	10	13	9	3	S. 65 46 E.	.21	S. 25 W.	.24	85
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 64 11 E.	.33	....	...	626
48. Longitude 65° to 70° E.	Spring	11	8	10	16	51	29	30	2	5	3	6	3	2	0	0	9	1	S. 86 10 E.	.60	S. 58 E.	.43	62
49. Longitude 70° to 75° E.	Winter	2	5	9	6	38	22	34	13	6	2	7	6	4	2	0	1	9	S. 63 4 E.	.57	S. 27 E.	.55	55
50. Longitude 75° to 85° E.	Spring	1	0	2	6	53	43	57	8	12	7	15	5	4	2	7	4	0	S. 54 21 E.	.62	S. 65 W.	.36	75
	Summer	23	2	7	3	7	10	36	8	26	13	43	23	28	16	25	6	7	S. 51 4 W.	.30	N. 87½ W.	.40½	94
	Autumn	13	5	9	10	18	12	27	18	22	13	19	8	8	8	17	8	2	S. 21 51 E.	.20	N. 77 W.	.10	72
	Winter	4	3	12	20	68	50	68	19	23	10	8	9	6	2	12	3	6	S. 60 41 E.	.58	S. 76½ E.	.34	108
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 39 39 E.	.27	....	...	349
51. Longitude 85° to 100° E.	Spring	13	5	23	43	42	65	90	35	23	9	25	6	8	8	9	7	9	S. 60 22 E.	.51	N. 88 E.	.28	140
	Summer	8	1	3	3	18	13	28	13	12	17	32	13	17	6	8	18	15	S. 16 19 W.	.26	N. 87½ W.	.23½	75
	Autumn	15	5	17	21	32	25	55	39	57	40	65	14	19	10	33	11	9	S. 4 34 E.	.33	S. 63½ W.	.15½	156
	Winter	25	6	18	7	65	47	77	50	40	15	26	5	9	9	30	14	33	S. 50 13 E.	.36	N. 88½ E.	.11	159
	The year[1]	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	S. 32 31 E.	.31	....	...	530
52. Longitude 105° to 110° E.	Spring	12	3	25	14	31	96	404	292	209	48	94	20	46	12	18	9	31	S. 37 7 E.	.66	N. 89 E.	.11	455
	Summer	17	2	18	16	33	28	136	22	67	12	55	5	34	6	27	7	5	S. 24 32 E.	.40	N. 34 W.	.20	164
	Autumn	12	9	5	3	6	16	72	55	95	16	43	7	24	4	14	10	14	S. 41 24 E.	.67	N. 80 E.	.16	135
	Winter	4	0	3	1	8	13	95	86	85	36	17	15	23	4	1	0	1	S. 10 35 E.	.73	S. 40 W.	.24	131
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 28 29 E.	.60	....	...	885
53. Longitude 110° to 115° E.	Spring	35	9	24	12	62	58	330	408	330	93	138	42	55	19	33	17	41	S. 14 0 E.	.63	S. 47½ E.	.17	569
	Summer	38	5	7	11	34	54	53	20	29	28	40	23	45	21	28	18	13	S. 3 50 W.	.16	N. 17 W.	.34	156
	Autumn	16	0	5	0	7	4	21	31	21	35	23	9	11	7	5	2	3	S. 28 1 W.	.39	N. 54 W.	.27½	67
	Winter	0	0	0	0	0	3	33	60	60	23	7	0	1	0	0	3	0	S. 11 28 E.	.87	S. 22½ E.	.38	64
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 3 50 E.	.50	....	...	856

[1] Computed from the resultants for the seasons.

(No. 54.) **Brisbane, Australia.**

Observed for two years, March, 1867, to March, 1869, three times a day. Computations made by Edm. MacDonnell; observer's name not stated.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N.E. or bet. N. & E.	East.	S. E. or bet. S. & E.	South.	S. W. or bet. S. & W.	West.	N. W. or bet. N. & W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
January	2	14	4	4	3	1	2	1					
February	1	10	2	7	3	3	1	1					
March	1	9	4	7	5	3	1	1					
April	1	6	3	3	9	5	3	0					
May	1	1	1	3	8	12	4	1					
June	0	2	1	4	8	9	4	2					
July	1	3	1	3	6	10	5	2					
August	1	7	1	2	7	7	5	1					
September	2	7	2	3	6	4	5	1					
October	8	9	2	2	2	2	3	3					
November	7	11	1	3	2	2	1	3					
December	6	13	2	2	2	1	2	3					
Spring	3	16	8	13	22	20	8	2	...	S. 9° 39′ E.	.32½	S. 5½°W.	.26
Summer	2	12	3	9	21	26	14	5	...	S. 29 41 W.	.40	S. 44 W.	.40
Autumn	17	27	5	8	10	8	9	7	...	N. 27 2 E.	.24	N. 17 E.	.28
Winter	9	37	8	13	8	5	5	5	...	N. 60 7 E.	.40	N. 45½ E.	.37½
The year	31	92	24	43	61	59	36	19	...	S. 50 8 E.	.10		

(Nos. 55 and 56.) **Pacific Ocean,** west of longitude 180.°

From observations for an aggregate period of nearly 2½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
55. Longitude 150° to 165° E.	Spring	7	10	14	17	127	93	152	25	62	34	34	4	5	3	11	0	10	S. 52° 23′ E.	.63	S. 49½°E.	.19	203
	Summer	19	3	7	4	15	4	28	16	32	21	21	9	10	13	4	3	9	S. 2 23 W.	.29	S. 85 W.	.36½	73
	Autumn	15	4	8	8	23	8	29	3	15	8	9	1	1	2	7	2	9	S. 71 4 E.	.34	N. 11½ W.	.15	51
	Winter	3	0	31	14	31	49	49	14	8	8	12	0	0	0	4	0	11	S. 68 51 E.	.64	N. 82½ E.	.25	78
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 53 43 E.	.44	....	...	405
56. Longitude 165° to 180° E.	Spring	30	15	25	33	70	34	44	32	56	12	19	10	14	8	15	4	16	S. 63 41 E.	.35	S. 50 E.	.18	146
	Summer	29	12	27	47	62	28	48	19	55	16	57	17	76	9	16	7	11	S. 24 3 E.	.16½	S. 75 W.	.19	177
	Autumn	8	43	21	14	33	8	32	7	27	0	12	14	37	2	10	2	3	N. 83 53 E.?	.17	N. 33½ W.	.16	91
	Winter	8	0	10	11	41	32	28	5	6	5	10	1	15	2	7	0	6	S. 72 31 E.	.45	S. 76½ E.	.18	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 45 E.	.27	....	...	477

[1] Computed from the resultants for the seasons.

ZONE No. 25.

Latitude 30° to 35° South.

The data for the study of the winds of this zone consist of observations made at 14 stations on land, for an aggregate period of 47 years 9 months; at sea for over 70 years. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	over 31 years.
South America,	7	7 years 9 months.
Atlantic Ocean,	....	over 14 years.
Africa,	3	25 years 6 months.
Indian Ocean,	....	nearly 25 years.
Australia,	4	14 years 6 months.

(Nos. 1 to 19.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of nearly 25½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
1. Long. 175° W. to 180°	Spring	138	61	127	123	230	52	243	54	196	283	38	58	164	33	57	15	32	S. 37° 39′ E.	.23	S. 10½° E.	.13½	635
	Summer	8	1	22	10	17	8	13	11	24	37	1	14	39	21	26	7	0	S. 60 6 W.	.20	S. 80 W.	.29	87
	Autumn	66	27	89	55	68	13	35	18	51	54	29	27	58	13	33	16	22	N. 60 21 E.	.37	N. 42 E.	.31	225
	Winter	108	17	105	109	226	48	233	73	220	207	79	61	143	23	77	24	28	S. 28 26 E.	.26	S. 2½ E.	.18	594
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 66 24 E.	.12½	....	...	1541
2. Long. 170° to 175° W.	Spring	13	29	29	22	39	16	38	13	40	3	27	22	37	0	26	4	20	S. 57 32 E.	.12½	N. 61 E.	.09½	126
	Autumn	81	36	57	51	112	23	84	29	124	64	91	78	172	71	60	18	39	S. 52 42 W.	.16	N. 84 W.	.14	397
	Winter	18	4	48	18	29	22	19	6	28	8	32	9	36	5	10	2	9	S. 65 58 E.	.12½	N. 60½ W.	.09½	101
3. Long. 165° to 170° W.	Spring	15	3	27	33	6	19	5	0	6	2	8	6	9	6	1	3	20	N. 59 54 E.	.34	N. 44 E.	.39	57
	Autumn	26	8	45	3	35	7	16	12	43	17	42	24	12	23	11	22	14	S. 35 51 W.	.06½	N. 41½ W.	.08½	120
	Winter	1	0	10	9	16	14	15	7	16	2	19	6	11	6	9	1	0	S. 13 38 E.	.27	S. 14½ E.	.15½	48
4. Long. 165° to 175° W.	Summer	0	0	6	0	1	12	0	6	2	0	10	3	12	3	0	0	0	S. 21 57 W.	.29	S. 40 W.	.20	19
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 12 27 E.	.11½	....	...	868
5. Long. 160° to 165° W.	Spring	7	9	7	10	23	20	4	3	9	3	20	4	10	7	9	9	0	N. 87 32 E.	.12	N. 25 E.	.18	851
	Autumn	38	10	41	27	31	38	53	22	37	18	57	17	39	8	46	14	22	S. 32 32 E.	.08	S. 85 E.	.06	173
	Winter	23	10	20	20	52	44	36	8	23	4	20	10	34	4	20	5	12	S. 75 47 E.	.24	N. 89 E.	.25	115
6. Long. 150° to 165° W.	Summer	4	2	12	0	13	0	4	0	11	5	15	5	22	7	14	2	5	S. 86 2 W.?	.28	N. 81 W.	.26½	40
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 16 31 W.	.06½	....	...	948
7. Long. 155° to 160° W.	Spring	7	0	3	8	15	14	19	3	8	2	22	8	9	3	10	7	4	S. 16 25 E.?	.17	S. 33 E.	.07	47
	Autumn	21	10	37	6	25	21	16	13	38	24	38	22	24	17	29	2	11	S. 28 24 W.	.13	S. 40½ W.	.04	118
	Winter	18	2	23	17	35	16	52	14	28	11	29	28	38	13	24	13	7	S. 2 36 E.	.13	S. 19½ E.	.04	123
8. Long. 150° to 155° W.	Spring	10	2	6	1	15	9	26	0	12	1	3	0	20	9	13	5	0	S. 60 50 E.?	.05	N. 58 E.	.04	44
	Autumn	15	9	31	19	26	19	14	20	32	24	15	19	19	8	26	12	7	S. 20 55 E.	.15	S. 20½ E.	.05	104
	Winter	32	6	28	13	60	22	57	11	24	3	30	11	36	16	37	9	2	S. 83 43 E.	.12	N. 69 E.	.09	133
9. Long. 120° to 150° W.	Spring	23	4	25	17	18	32	38	8	25	8	6	11	31	4	29	12	15	S. 84 32 E.	.12	S. 32 E.	.13	102
	Summer	4	25	12	0	1	1	1	0	0	2	6	8	14	0	1	2	3	N. 14 28 W.?	.36	N. 29 W.	.28	27
	Autumn	18	6	18	21	25	10	26	7	14	14	15	5	16	7	15	4	4	S. 78 55 E.	.16	S. 39 E.	.17	75
	Winter	43	12	32	10	26	19	38	4	27	7	26	18	19	17	20	31	23	N. 16 18 E.	.10	S. 85½ W.	.02	124
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 27 8 E.	.11	....	...	328
10. Long. 110° to 120° W.	Autumn	17	9	11	8	12	30	9	18	11	3	12	17	11	7	19	13	10	N. 84 16 E.	.05	S. 31 W.	.05	72
	Winter	14	7	22	10	21	20	28	9	14	0	20	1	5	4	12	12	16	S. 86 25 E.	.25	S. 70 E.	.18½	72
11. Long. 105° to 120° W.	Spring	16	6	8	8	14	10	21	21	7	2	28	6	10	10	25	29	14	N. 52 57 W.	.07	S. 87½ W.	.13	78
	Summer	7	8	13	5	18	11	6	0	0	3	5	2	20	1	12	12	8	N. 16 7 E.?	.24	N. 3 W.	.18½	44
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	N. 58 0 E.	.09	....	...	375
12. Long. 105° to 110° W.	Autumn	10	11	6	9	34	15	15	10	27	3	11	5	2	2	2	6	10	S. 63 2 E.	.36	S. 49 E.	.36½	59
	Winter	13	5	7	12	20	0	7	10	3	4	19	3	15	5	11	6	12	N. 6 57 W.	.04	S. 85½ W.	.09	50
13. Long. 100° to 105° W.	Spring	11	6	8	0	3	6	8	4	7	1	10	4	15	16	21	15	15	N. 52 40 W.	.32	N. 54½ W.	.24	50
	Summer	11	12	7	4	21	18	11	4	9	11	9	1	10	6	11	22	9	N. 49 3 E.	.13	N. 79 E.	.16	59
	Autumn	18	5	6	2	1	3	11	7	25	4	8	9	3	5	13	8	2	S. 61 43 W.?	.11	S. 20 W.	.11	43
	Winter	11	10	14	15	33	7	22	8	15	2	18	5	35	11	21	3	19	N. 84 44 E.	.03	S. 58½ E.	.10	83
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 46 1 W.	.08	....	...	235
14. Long. 95° to 100° W.	Spring	25	19	19	18	29	7	15	21	9	14	13	6	22	21	42	11	6	N. 5 3 W.	.15	N. 37 W.	.08	99
	Summer	7	6	12	2	6	10	2	8	2	9	6	0	9	8	13	0	1	N. 7 43 W.?	.07	S. 77 W.	.05	34
	Autumn	36	19	15	14	11	17	16	8	14	9	7	3	24	6	21	1	16	N. 25 9 E.	.16	N. 25½ E.	.07	79
	Winter	19	9	16	33	29	19	33	28	23	8	12	6	30	6	41	9	29	S. 80 34 E.	.12	S. 38 E.	.12	117
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 24 56 E.	.09	....	...	329
15. Long. 90° to 95° W.	Spring	15	1	10	10	4	20	14	20	18	9	15	11	23	17	32	19	11	S. 84 14 W.	.15	N. 77½ W.	.12	83
	Summer	8	8	3	10	0	0	20	8	9	5	12	7	14	12	4	2	2	S. 45 24 W.?	.18	S. 51 W.	.14	41
	Autumn	38	3	28	10	26	11	39	6	18	11	14	8	26	8	24	5	24	N. 64 44 E.	.08	N. 52 E.	.11	100
	Winter	24	8	25	14	32	43	55	27	25	11	7	5	36	16	49	11	19	S. 71 41 E.	.13	S. 88 E.	.14	136
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 26 24 W.	.04	....	...	360
16. Long. 85° to 90° W.	Spring	17	5	28	10	83	47	73	32	28	9	31	6	42	24	28	26	15	S. 57 30 E.	.23	S. 66½ E.	.17	168
	Summer	13	8	20	2	7	6	9	13	5	4	10	14	7	13	14	18	6	N. 35 14 W.	.15	N. 32 W.	.23	56
	Autumn	45	9	17	13	21	12	70	37	71	43	59	17	59	36	80	21	43	S. 50 58 W.	.21	S. 73 W.	.20½	218
	Winter	8	3	14	18	48	58	138	58	57	21	50	20	70	32	54	11	56	S. 12 34 E.	.29	S. 7 E.	.21	239
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 25 50 E.	.08	....	...	681
17. Long. 80° to 85° W.	Spring	55	68	16	26	8	51	82	411	169	335	100	148	58	240	78	138	76	S. 28 34 W.	.40	S. 45 E.	.05	686
	Summer	8	19	4	1	0	6	12	49	45	36	17	30	33	48	22	33	14	S. 60 43 W.	.35	N. 29 W.	.17½	126
	Autumn	23	31	5	16	21	26	13	145	86	133	79	87	41	105	38	56	34	S. 36 55 W.	.35	N. 13 E.	.04½	313
	Winter	18	15	0	15	14	52	89	483	256	313	88	131	69	214	67	91	86	S. 19 1 W.	.49	S. 23½ E.	.15	667
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 34 24 W.	.39	....	...	1792
18. Long. 75° to 80° W.	Spring	58	63	7	10	5	20	22	169	162	278	40	136	45	76	76	128	63	S. 45 37 W.	.35	N. 40½ E.	.12	453
	Summer	3	1	0	0	0	1	1	35	20	45	31	25	9	28	16	40	7	S. 59 35 W.	.48	N. 33 W.	.13	87
	Autumn	7	10	2	4	0	7	8	52	50	144	33	57	19	58	35	35	15	S. 47 11 W.	.51	S. 89 W.	.17	179
	Winter	18	14	2	5	3	11	13	180	219	303	75	135	53	72	33	54	55	S. 28 41 W.	.59	S. 14 E.	.18	415
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 44 20 W.	.47	....	...	1134
19. Long. 71° to 75° W.	Spring	28	82	10	14	0	8	7	36	117	202	104	54	13	25	11	57	37	S. 36 46 W.	.39	N. 13½ W.	.05½	268
	Summer	22	38	12	6	0	1	1	26	22	52	20	22	8	5	9	24	13	S. 62 3 W.	.17	N. 13½ E.	.30	94
	Autumn	14	14	4	5	0	0	3	22	59	99	23	22	4	4	1	11	8	S. 22 33 W.	.57	S. ½ E.	.15	98
	Winter	10	20	7	3	1	2	12	27	107	283	75	23	5	18	3	33	40	S. 25 0 W.	.64	S. 14 W.	.21	223
	The year[1]	...	...	...	...	...	...	...	..	...	..	...	...	...	...	...	...	...	S. 30 23 W.	.43	....	...	683

[1] Computed from the resultants for the seasons.

(Nos. 20 and 21.) **Central Chili, South America.**

Observed at the following places, viz. :—

Santiago, Chili, by officers of the United States Naval Astronomical Expedition, under command of Lieut. J. M. Gilliss, from November, 1849, to September, 1852, inclusive.

Valparaiso, Chili, by Messrs. W. J. Ward and Mackey, from May, 1853, to December, 1855, inclusive, except January and June, 1854.

Place of observation.		Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
20 Valparaiso.		Spring	95	...	34	...	11	...	22	...	57	...	39	...	13	...	25	...	124	N. 11° 49′ W.	.08½	N. 24° E.	.09	210
		Summer	128	...	48	...	14	...	32	...	61	...	38	...	16	...	30	...	128	N. 12 47 E.	.15	N. 31 E.	.17	243
		Autumn	80	...	43	...	37	...	12	...	109	...	96	...	14	...	42	...	50	S. 38 15 W.	.12	S. 11 W.	.09½	242
		Winter	50	...	25	...	7	...	4	...	85	...	66	...	20	...	24	...	79	S. 48 24 W.	.21	S. 37 W.	.17	180
		The year[1]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 34 W.	.05½			
21. Santiago.	Spring	3 A. M.	39	6	60	0	36	0	12	3	9	3	6	3	3	3	27	9	18	N. 44 54 E.	.42	....	...	79
		6 A. M.	10	1	66	2	14	6	17	3	8	1	9	2	4	2	12	3	71	N. 56 52 E.	.30	....	...	231
		9 A. M.	15	4	47	3	11	2	15	10	26	0	37	8	15	6	22	4	48	S. 80 12 W.	.02	....	...	273
		Noon	4	1	12	0	11	3	11	5	25	5	113	18	18	2	11	3	33	S. 41 56 W.	.51	....	...	275
		3 P. M.	1	2	3	1	7	0	11	4	25	12	156	16	14	2	4	0	17	S. 39 32 W.	.73	....	...	275
		6 P. M.	0	1	16	1	22	3	19	3	36	15	82	13	6	1	6	1	48	S. 17 14 W.	.42	....	...	273
		9 P. M.	15	3	68	3	19	3	14	8	26	3	21	7	4	5	17	4	55	N. 64 30 E.	.17	....	...	275
		Midnight	33	3	83	4	16	1	15	3	10	2	7	0	5	1	36	11	41	N. 26 47 E.	.42	....	...	271
		Total	117	21	355	14	136	18	114	39	165	41	431	67	69	22	135	35	331	S. 24 8 W.	.06½	N. 72° E	.12	276
	Summer	3 A. M.	27	0	42	9	21	3	24	21	15	6	9	0	0	6	30	18	45	N. 50 43 E.	.21	....	...	92
		6 A. M.	5	2	43	2	17	3	18	12	6	1	11	0	3	1	35	5	106	N. 47 14 E.	.15½	....	...	270
		9 A. M.	12	3	32	4	6	1	18	9	16	4	28	4	13	3	43	4	76	N. 61 22 W.	.09	....	...	276
		Noon	6	1	15	1	8	1	10	4	12	4	72	5	15	6	41	3	72	S. 70 32 W.	.30	....	...	276
		3 P. M.	6	1	13	1	12	3	13	6	18	7	89	12	15	1	15	8	56	S. 43 31 W.	.36	....	...	276
		6 P. M.	6	6	75	5	10	1	14	14	9	16	20	4	10	2	17	2	53	N. 73 9 E.	.14½	....	...	274
		9 P. M.	9	2	104	3	24	5	2	5	13	15	6	0	6	2	21	2	64	N. 46 28 E.	.40	....	...	273
		Midnight	14	5	94	4	15	4	9	6	14	4	9	1	4	2	29	8	54	N. 38 17 E.	.36	....	...	276
		Total	85	20	418	29	113	21	108	77	113	47	244	26	66	23	231	50	526	N. 31 22 E.	.07	N. 48 E.	.23	276
	Autumn	3 A. M.	21	14	41	0	7	14	14	7	28	0	7	7	14	0	14	0	35	S. 72 51 E.	.06	....	...	28
		6 A. M.	5	0	31	0	6	2	10	3	6	3	15	5	7	2	24	0	80	N. 16 8 W.	.07	....	...	199
		9 A. M.	4	2	25	0	1	3	14	2	11	4	47	11	22	9	20	1	32	S. 67 52 W.	.29	....	...	208
		Noon	0	0	5	2	3	4	16	1	20	8	85	25	16	5	10	1	16	S. 46 4 W.	.59	....	...	207
		3 P. M.	0	0	5	2	2	2	7	4	11	18	112	23	7	3	4	0	7	S. 41 44 W.	.74	....	...	207
		6 P. M.	0	0	5	0	4	0	11	6	19	19	107	20	6	2	2	0	6	S. 38 22 W.	.77	....	...	207
		9 P. M.	2	3	34	7	12	2	9	4	14	6	37	9	7	0	10	0	48	S. 5 56 E.	.10½	....	...	204
		Midnight	11	4	43	3	7	0	7	6	7	3	14	6	8	3	39	5	40	N. 9 5 W.	.23	....	...	206
		Total	43	23	162	14	42	27	88	33	106	61	424	106	87	24	123	7	264	S. 47 5 W.	.28	S. 36 W.	.12	242
	Winter	3 A. M.	60	5	35	0	0	0	25	0	15	5	20	0	20	0	25	0	55	N. 9 36 W.	.21	....	...	53
		6 A. M.	11	5	48	1	7	1	1	1	8	1	14	6	12	2	12	5	125	N. 8 41 E.	.16	....	...	260
		9 A. M.	10	3	32	0	3	2	5	5	4	6	91	8	23	4	14	1	60	S. 63 51 W.	.31	....	...	271
		Noon	0	0	6	0	5	0	4	4	6	13	174	23	17	2	8	1	7	S. 47 55 W.	.79	....	...	270
		3 P. M.	0	0	1	0	0	0	1	2	9	13	178	34	23	3	3	1	2	S. 49 40 W.	.89	....	...	270
		6 P. M.	0	0	0	0	0	0	2	0	11	15	172	42	19	1	3	0	3	S. 49 1 W.	.91	....	...	268
		9 P. M.	1	1	47	5	33	9	11	2	38	7	39	4	12	3	13	0	41	S. 37 43 E.	.18	....	...	266
		Midnight	20	1	42	2	18	3	16	3	10	4	14	3	14	6	43	13	59	N. 3 24 W.	.20½	....	...	271
		Total	54	11	183	8	66	15	45	17	89	60	686	120	124	21	101	21	108	S. 56 37 W	.32½	S. 58½ W.	.16	271
		The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 54 58 W.	.16½	....	...	1065

[1] Computed from the resultants for the seasons.

(Nos. 22 to 25.) **Argentine Republic and Southern Uruguay.**

Observed at the following places, viz. :—

Buenos Ayres, Argentine Republic, for an aggregate period of 18 months, in the years 1853 to 1856, inclusive.

Maldonado, Uruguay, by Charles Darwin, for 72 days, in the year 1831 or 1832.

Mendoza, Argentine Republic, by Prof. Burmeister, during the year 1857, recorded below in percentage of entire number of observations.

Monte Video, Uruguay, by Charles Darwin, for 101 days in the year 1831 or 1832.

Parana, Argentine Republic, by Prof. Burmeister, from May, 1858, to June, 1859, recorded below in percentage of the entire number of observations.

(Nos. 22 to 25.) **Argentine Republic, etc.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
22. Mendoza (percent.).	Spring	8	15	15	21	31	10	0	0						
	Summer	3	3	3	33	13	13	13	20						
	Autumn	1	15	12	23	21	18	0	10						
	Winter	9	15	3	20	30	15	1	6						
	The year	5	12	8	24	24	14	4	9						
23. Parana (percent.).	Spring	21	21	17	7	18	7	3	6						
	Summer	24	21	14	15	7	12	6	1						
	Autumn	15	18	13	17	18	12	1	5						
	Winter	9	18	13	20	25	9	1	5						
	The year	17	19	14	15	17	10	3	4						
24. Buenos Ayres.	January	8	7	3	2	1	5	1	4	0					
	February	8	6	3	3	0	5	2	1	0					
	March	6	6	7	3	4	2	0	3	0					
	April	2	5	5	6	4	1	2	2	3					
	May	10	9	1	2	3	6	0	0	0					
	June	4	0	2	7	2	8	6	1	0					
	July	6	3	6	2	0	7	3	4	0					
	August	6	3	7	5	4	3	1	2	0					
	September	2	7	8	5	2	4	1	1	0					
	October	4	5	11	4	2	4	0	1	0					
	November	5	5	7	6	0	4	2	1	0					
	December	8	9	4	4	0	4	1	1	0					
	Spring	18	20	13	11	11	9	2	5	3	N. 65° 23′ E.	.27½	N. 72½° E.	.05	
	Summer	16	6	15	14	6	18	10	7	0	S. 25 13 E.	.04	S. 53½ W.	.23	
	Autumn	11	17	26	15	4	12	3	3	0	N. 86 39 E.	.38½	S. 69 E.	.20	
	Winter	24	22	10	9	1	14	4	6	0	N. 27 26 E.	.33	N. 14½ W.	.20	
	The year	69	65	64	49	22	53	19	21	3	N. 64 2 E.	.22½			
25. Monte Video and Maldonado.	Spring	6	5	2	6	3	4	0	7	2	North.??	...	....	...	31
	Summer	9	9	7	9	10	12	15	12	2	S. 82 7 W.?	...	....	...	66
	Autumn	1	13	11	25	6	16	4	7	2	S. 44 34 E.?	...	....	...	76

(Nos. 26 to 40.) **Atlantic Ocean.**

From observations for an aggregate period of over 14 years, collected and classified from the logs of numerous sailing vessels at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
26. Long. 45° to 53° W.	Spring	38	20	48	28	45	19	27	13	37	11	26	7	10	6	36	21	14	N. 61° 23′ E.	.21	N. 21° E.	.06	135
	Summer	11	7	8	5	18	4	6	5	16	15	22	4	3	2	4	4	4	S. 14 51 E.?	.19	S. 27 W.	.25½	46
	Autumn	18	14	50	13	7	6	13	13	26	18	20	6	2	2	4	5	8	S. 86 0 E.	.20	S. 36½ E.	.07	75
	Winter	79	55	93	41	48	21	44	12	22	20	29	12	24	3	39	30	11	N. 38 49 E.	.34	N. 12 E.	.23	194
	The year[1]	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	N. 75 23 E.	.17	....	...	450
27. Long. 40° to 45° W.	Spring	32	17	12	11	7	7	25	5	27	8	44	22	9	13	24	10	9	S. 79 6 W.	.14	S. 54 W.	.14	94
	Summer	19	6	6	3	12	8	12	2	14	12	12	10	15	5	35	24	1	N. 54 18 W.	.25	N. 63 W.	.22	65
	Autumn	38	25	39	25	28	12	31	17	27	24	48	12	24	4	6	20	10	S. 77 41 E.	.09	S. 56½ E.	.13½	130
	Winter	50	21	81	28	25	23	32	12	31	20	30	14	14	12	38	9	22	N. 48 59 E.	.19	N. 67½ E.	.18	154
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 24 11 W.	.06	....	...	443
28. Long. 35° to 40° W.	Spring	23	17	49	22	16	12	17	11	23	4	56	7	12	5	25	11	9	N. 50 17 E.	.08	S. 65 E.	.07	106
	Summer	43	7	19	3	5	8	12	7	7	8	24	2	31	5	50	21	5	N. 39 39 W.	.35	N. 54½ W.	.19½	86
	Autumn	24	27	33	5	23	17	41	17	40	27	50	15	17	4	23	11	19	S. 12 1 E.	.15	S. 12½ E.	.23	131
	Winter	54	31	34	21	47	29	32	15	32	7	28	6	24	8	39	24	12	N. 45 51 E.	.19	N. 69½ E.	.14	148
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	North.	.08	....	...	471
29. Long. 30° to 35° W.	Spring	24	10	17	3	16	8	3	9	8	12	12	8	9	8	37	22	5	N. 24 41 W.	.27	N. 22 W.	.09	70
	Summer	27	8	12	3	2	2	11	8	8	10	17	4	6	8	7	14	8	N. 37 53 W.	.15	S. 17 W.	.04	52
	Autumn	29	11	22	3	14	6	11	9	10	14	29	4	21	5	27	9	1	N. 62 20 W.	.21	S. 60 W.	.12	75
	Winter	56	18	23	11	27	13	37	7	25	6	10	4	12	13	45	28	9	N. 14 27 E.	.24	N. 62½ E.	.15	115
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 25 35 W.	.18	....	...	312
30. Long. 25° to 30° W.	Spring	5	7	9	0	5	3	2	1	3	2	6	1	3	2	15	3	1	N. 11 45 W.?	.29	N. 78 W.	.16	23
	Summer	18	8	18	6	15	6	4	0	0	2	0	1	1	2	7	8	4	N. 30 52 E.?	.57	N. 38½ E.	.32½	33
	Autumn	67	28	27	17	64	15	37	10	45	4	39	16	18	4	50	4	5	N. 55 3 E	.14	S. 4½ E.	.17	150
	Winter	26	6	26	9	7	8	34	4	4	5	15	4	15	6	18	16	10	N. 23 4 E.	.16	S. 21 W.	.11	71
	The year[1]	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	N. 22 17 E.	.27	....	...	277

[1] Computed from the resultants for the seasons.

(Nos. 31 to 40.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
	Spring	7	3	7	4	5	2	3	0	1	2	5	0	0	3	18	10	0	N. 9° 8′ W.?	.43	N. 5½° W.	.15	23
31. Long.	Summer	28	30	17	5	7	17	8	6	1	13	9	10	7	6	29	27	1	N. 3 48 W.	.35	N. 22½ E.	.08	74
20° to	Autumn	55	16	42	12	21	22	41	19	37	28	43	25	45	9	111	30	6	N. 56 13 W.	.18	S. 29 W.	.20	187
25° W.	Winter	75	16	28	16	15	13	20	15	16	13	26	4	17	5	32	19	5	N. 6 44 E.	.23	S. 59 E.	.09½	112
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 10 56 W.	.28	....	...	396
	Spring	13	11	7	0	3	3	2	2	6	1	9	6	10	6	23	13	1	N. 39 28 W.?	.43	N. 49½ W.	.19	39
32. Long.	Summer	29	11	32	1	6	6	18	5	8	13	17	16	10	17	38	20	5	N. 26 28 W.	.25	N. 36½ E.	.02	84
15° to	Autumn	46	14	45	11	27	13	38	27	28	9	36	22	28	6	39	37	9	N. 10 34 W.	.07	S. 43 E.	.18	145
20° W.	Winter	25	16	18	7	13	5	14	14	11	2	24	10	10	18	37	16	8	N. 31 54 W.	.21	S. 30 E.	.03	83
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 31 41 W.	.24	....	...	351
	Spring	11	16	2	2	1	8	5	4	6	19	3	1	2	11	0	17	0	N. 28 3 W.?	.12	N. 70½ E.	.09	36
33. Long.	Summer	14	20	4	2	2	8	2	5	8	13	4	18	23	51	6	17	1	N. 65 27 W.	.45	N. 68 W.	.29	66
10° to	Autumn	13	25	8	15	6	25	30	41	18	24	19	28	16	27	19	57	8	N. 72 54 W.	.08	S. 49½ E.	.08	126
15° W.	Winter	15	9	2	13	5	8	10	19	9	10	8	7	5	20	8	12	8	S. 88 25 W.	.04	S. 52 E.	.12	56
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 20 W.	.16	....	...	284
	Spring	10	15	1	0	0	2	2	4	4	3	5	7	1	16	9	3	3	N. 47 52 W.?	.37	N. 18 W.	.14	28
34. Long.	Summer	13	9	9	8	2	9	3	22	6	8	8	15	11	18	6	20	2	N. 68 8 W.	.15	S. 67 E.	.15	56
5° to	Autumn	15	37	8	11	9	14	17	28	8	28	15	10	10	72	31	27	5	N. 57 1 W.	.22	N. 87½ E.	.05	115
10° W.	Winter	6	6	4	6	2	6	5	6	1	7	12	23	6	23	9	11	2	N. 82 40 W.?	.35	S. 57 W.	.13½	45
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 63 33 W.	.26	....	...	244
35. Long.	Summer	10	4	0	0	2	5	9	23	2	11	7	11	7	22	5	3	3	S. 51 18 W.?	.29	N. 85 W.	.10	41
0° to	Autumn	1	12	8	17	8	16	3	17	8	28	11	21	9	47	12	36	2	N. 79 28 W.	.22	N. 21 W.	.25	85
5° W.	Winter	4	2	0	2	4	12	4	9	4	11	9	38	17	20	3	5	10	S. 63 57 W.	.44	S. 89 W.	.27	51
36. Long.	Summer	9	0	1	1	2	5	6	11	16	8	3	5	3	31	2	4	10	S. 50 34 W.?	.32	S. 84 W.	.12	42
0° to	Autumn	5	17	2	30	11	22	15	73	13	23	17	20	23	35	19	31	10	S. 15 15 W.	.15	N. 63 E.	.10	122
5° E.	Winter	4	3	1	6	2	10	5	20	0	18	2	19	7	13	6	6	9	S. 39 6 W.?	.26	S. 67 W.	.03	44
37. Long.	Summer	9	0	0	0	0	9	11	8	9	11	5	5	0	14	3	0	2	S. 17 9 W.?	.33	S. 14½ E.	.13	29
5° to	Autumn	2	16	6	26	7	102	109	197	91	190	50	129	59	146	17	94	30	S. 21 16 W.	.39	S. 4½ W.	.17	424
10° E.	Winter	0	7	0	0	1	21	10	40	21	21	14	14	1	14	0	0	23	S. 0 27 E.	.51	S. 23 E.	.34½	62
38. Long. 5° W. to	Spring	5	9	4	2	2	17	19	18	4	4	5	13	2	16	11	13	1	S. 2 32 W.?	.07	N. 46 E.	.17	48
10° E.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 33 57 W.	.23	....	...	948
	Spring	3	1	0	4	1	93	56	53	18	31	15	24	8	13	11	6	10	S. 24 29 E.	.53	S. 86 E.	.18	116
39. Long.	Summer	9	11	0	5	3	21	23	33	25	19	10	13	8	10	8	18	6	S. 3 56 E.	.28	N. 7 E.	.20	74
10° to	Autumn	13	21	3	10	5	98	112	285	115	159	56	185	63	92	32	42	32	S. 14 6 W.	.48	N. 89 W.	.16	441
15° E.	Winter	0	0	0	1	4	19	42	49	28	43	9	15	3	18	2	2	5	S. 4 43 E.	.64	S. 3½ E.	.17	80
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 5 20 E.	.47	....	...	711
	Spring	6	5	4	17	16	60	27	39	20	22	13	19	19	27	6	5	15	S. 23 1 E.	.33	N. 50½ E.	.10	107
40. Long.	Summer	2	2	6	6	5	14	8	12	3	7	6	6	3	8	2	5	3	S. 35 25 E.?	.22	N. 22 E.	.20	33
15° to	Autumn	3	5	2	7	3	38	41	50	17	48	7	31	11	23	13	7	5	S. 0 8 W.	.42	S. 44½ W.	.07	104
20° E.	Winter	3	1	1	7	4	45	38	52	36	71	21	29	9	19	6	5	8	S. 4 52 W.	.56	S. 27½ W.	.21	118
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 8 11 E.	.37	....	...	362

[1] Computed from the resultants for the seasons.

(Nos. 41 to 45.) **Cape Colony, South Africa.**

Observed at the following places, viz. :—

Capetown, at the Observatory, during the years 1842 to 1855, and 1862 to 1865, both inclusive.

Graff Reinet, during the years 1863, 1864 and 1865.

Graham's Town, during a period of 4½ years, 1854 to 1859.

		North.	N. by E.	N. N. E.	N. E. by N.	N. E.	N. E. by E.	E. N. E	E by N.	East.	E. by S.	E. S. E	S. E. by E.	S. E.	S. E. by S.	S. S. E.	S. by E.	South.	S. by W.	S. S. W.	S. W. by S.
	Spring	97	27	36	6	22	6	8	5	12	9	12	12	256	104	160	328	1017	423	190	54
41.	Summer	748	255	149	48	113	21	26	34	122	72	100	131	1002	167	288	217	239	55	39	12
Capetown.	Autumn	83	13	22	5	11	3	6	4	17	8	6	6	294	68	203	400	1304	440	200	42
	Winter	40	9	6	0	8	1	3	1	8	5	7	6	236	61	142	409	1652	569	272	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

		S. W.	S. W. by W.	W. S. W.	W. by S.	West.	W. by N.	W. N W.	N. W by W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
																Direction.	Force
	Spring	155	19	35	20	78	60	103	101	906	128	197	133	S. 39° 29′ W.	.33	N. 19° W.	.05
41.	Summer	34	3	6	3	22	4	14	13	253	65	163	263	S. 83 43 W.	.25	N. 12 W.	.29
Capetown.	Autumn	97	22	21	29	127	82	107	88	681	97	166	96	S. 23 37 W.	.43	S. 13 E.	.09
	Winter	142	12	18	21	68	58	73	66	576	79	98	49	S. 15 22 W.	.57	S. 9 E.	.25
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	S. 32 26 W.	.36		

[1] Computed from the resultants for the seasons.

(Nos. 42 to 45.) **Cape Colony.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
42. Capetown.	January	1	0	0	2	21	1	2	4					
	February	1	0	0	2	19	1	2	4					
	March	1	0	1	2	17	1	3	6					
	April	2	0	0	3	14	2	3	6					
	May	3	0	0	2	13	1	3	9					
	June	5	0	0	1	9	3	4	8					
	July	5	0	0	1	12	2	4	7					
	August	3	0	0	2	11	2	5	8					
	September	2	0	0	2	12	2	5	7					
	October	2	0	0	1	14	2	6	6					
	November	2	0	0	2	17	1	3	5					
	December	1	0	0	3	20	1	3	3					
	The year	28	0	1	23	178	19	43	73	...	S. 35° 20′ W.	.44		
43. Graaf Reinet.	January	1	0	1	1	19	5	3	1					
	February	2	1	0	2	15	6	1	1					
	March	2	1	1	2	14	5	2	4					
	April	4	1	1	2	7	5	5	5					
	May	8	1	0	2	4	3	5	8					
	June	10	0	1	2	3	1	2	11					
	July	11	1	1	3	6	2	0	7					
	August	10	1	0	2	5	3	2	8					
	September	5	0	0	3	12	3	2	5					
	October	4	0	0	3	16	2	1	5					
	November	1	0	0	2	16	6	2	3					
	December	3	1	0	3	17	4	2	1					
	Spring	14	3	2	6	25	13	12	17	...	S. 67 30 W.	.29	N. 32½°W.	.14½
	Summer	31	2	2	7	14	6	4	26	...	N. 33 29 W.	.36	North	.51
	Autumn	10	0	0	8	44	11	5	13	...	S. 23 5 W.	.46	S. 4 E.	.22
	Winter	6	2	1	6	51	15	6	3	...	S. 12 6 W.	.64	S. 8½ E.	.42
	The year	61	7	5	27	134	45	27	53	...	S. 42 48 W.	.29		
44 & 45. Graham's Town.	January	0	3	4	9	3	9	2	1					
	February	1	2	2	8	3	7	2	3					
	March	1	3	2	8	3	8	1	5					
	April	1	2	2	4	2	9	3	7					
	May	1	1	1	2	1	8	3	14					
	June	1	1	0	1	1	6	5	15					
	July	1	1	0	1	1	7	6	14					
	August	0	2	2	2	1	9	5	10					
	September	1	3	3	3	2	9	4	3					
	October	1	3	3	5	5	9	2	5					
	November	0	2	4	8	4	7	3	2					
	December	1	2	3	8	5	9	1	2					
	Spring	3	6	5	14	6	25	7	26	...	S. 71 37 W.	.27½	N. 34½ W.	.08
	Summer	1	4	2	4	3	22	16	39	...	N. 78 59 W.	.58	N. 53 W.	.44½
	Autumn	2	8	10	16	11	25	9	10	...	S. 15 2 W.	.29	S. 48 E.	.18
	Winter	3	7	9	25	11	25	5	6	...	S. 7 51 E.	.38	S. 51 E.	.34
	The year	9	25	26	59	31	97	37	81	...	S. 53 30 W.	.26½		

(Nos. 46 to 67.) **Indian Ocean.**

From observations for an aggregate period of nearly 25 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
46. Long. 20° to 25° E.	Spring	0	5	8	10	6	11	1	9	4	25	13	60	53	23	5	3	13	S. 69° 29′ W.	.50	S. 68½°W.	.08	83
	Summer	5	17	9	17	12	13	2	6	1	25	11	62	44	50	7	14	8	N. 88 32 W.	.39	N. 2½ W.	.15½	101
	Autumn	1	5	1	5	15	18	6	3	3	16	9	45	38	33	1	1	5	S. 66 44 W.	.41	S. 55½ E.	.04½	68
	Winter	0	6	6	18	14	22	9	15	15	30	27	97	57	19	7	2	22	S. 53 31 W.	.45	S. 15 E.	.13	122
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 69 39 W.	.42	....	...	374
47. Long. 25° to 30° E.	Spring	17	69	44	94	19	63	22	27	14	78	45	93	37	27	6	26	16	S. 36 52 W.	.06	S. 78 E.	.03	242
	Summer	18	99	28	28	2	16	7	15	10	41	43	141	42	61	25	43	7	N. 68 4 W.	.27½	N. 52 W.	.24	209
	Autumn	10	32	20	58	19	18	11	21	18	48	35	70	15	15	7	11	6	S. 15 42 W.	.13	S. 20 E.	.09	138
	Winter	7	63	61	124	27	50	20	47	29	85	53	120	36	28	5	9	18	S. 25 14 E.	.11	S. 64 E.	.13	261
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 58 31 W.	.08	....	...	850

[1] Computed from the resultants for the seasons.

(Nos. 48 to 67.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
48. Long. 30° to 35° E.	Spring	40	112	81	115	47	72	44	114	38	142	53	47	27	28	10	49	10	S. 65° 59′ E.	.19	S. 79½° E.	.37	343
	Summer	34	83	49	34	11	20	17	37	23	90	39	45	19	30	25	62	7	N. 43 41 W.	.09	N. 61 E.	.15	208
	Autumn	20	85	45	72	14	28	22	35	24	63	55	51	15	19	24	49	8	N. 37 4 E.	.06	N. 74 E.	.24	210
	Winter	33	143	99	211	56	86	44	87	58	108	37	62	20	9	4	16	20	S. 87 33 E.	.33	S. 89½ E.	.52	364
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 34 E.	.12	....	...	1125
49. Long. 35° to 40° E.	Spring	33	72	31	107	30	63	30	72	31	62	37	37	6	35	8	38	11	S. 80 46 E.	.21	S. 22 E.	.11	234
	Summer	8	36	18	26	10	24	1	20	9	33	11	17	8	22	2	52	5	N. 7 24 E.	.13	N. 69½ W.	.16	101
	Autumn	16	82	29	39	13	27	17	13	13	30	16	29	6	16	8	45	5	N. 30 58 E.	.24	N. 16½ W.	.14	135
	Winter	15	58	42	143	50	83	27	64	37	52	17	24	15	21	15	40	10	S. 88 7 E.	.34	S. 64 E.	.19	238
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 44 E.	.18	....	...	708
50. Long. 40° to 45° E.	Spring	16	28	30	42	17	36	25	21	6	43	10	16	15	11	7	21	3	S. 87 27 E.	.20	S. 17 E.	.08	116
	Summer	6	5	11	10	2	12	7	7	5	9	5	6	1	7	2	23	8	N. 37 26 E.?	.12	N. 77 W.	.10	42
	Autumn	12	42	28	11	12	24	7	16	7	7	7	19	1	16	17	17	22	N. 30 28 E.	.24	N. 21½ W.	.15	88
	Winter	7	28	10	80	26	53	17	25	7	34	5	22	5	21	8	19	9	S. 88 7 E.	.30	S. 56½ E.	.15	125
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 59 E.	.19	....	...	371
51. Long. 45° to 50° E.	Spring	11	36	16	17	8	25	19	20	3	22	1	18	1	4	9	15	5	N. 78 23 E.	.22	S. 63 E.	.14	77
	Autumn	9	14	15	8	12	9	8	13	11	12	2	14	4	13	13	33	4	N. 2 26 W.	.19	N. 50 W.	.12	65
	Winter	8	15	5	42	14	44	3	27	8	14	5	5	8	8	4	25	2	N. 89 53 E.	.31	S. 64 E.	.25	79
52. Long. 45° to 55° E.	Summer	12	14	5	10	2	4	13	15	3	6	4	24	7	8	1	28	0	N. 40 41 W.	.14	S. 89 W.	.18	52
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 39 17 E.	.14	....	...	488
53. Long. 50° to 55° E.	Spring	19	46	7	17	2	33	10	25	2	6	0	3	0	21	9	14	5	N. 38 31 E.	.31	N. 37½ E.	.21	73
	Autumn	11	19	10	23	4	15	10	25	4	30	3	27	4	29	11	15	3	S. 77 36 W.	.05	S. 52 W.	.16½	84
	Winter	7	23	1	28	3	30	6	13	0	9	0	12	4	6	6	26	0	N. 51 24 E.	.27	S. 63 E.	.16	58
54. Long. 55° to 60° E.	Autumn	11	29	8	57	15	65	36	71	34	78	32	72	8	53	38	135	29	S. 58 42 W.	.09	N. 47 W.	.05	257
55. Long. 55° to 65° E.	Spring	2	14	5	6	3	13	6	8	15	18	3	7	6	17	14	20	0	N. 81 31 W.	.12	N. 88½ W.	.23	52
	Summer	6	11	5	3	0	8	4	9	4	22	2	10	8	12	7	11	4	N. 65 39 W.?	.18	N. 79 W.	.28½	42
	Winter	11	4	1	14	3	24	12	15	4	21	7	8	12	2	6	40	5	S. 14 2 E.	.00½	S. 8½ W.	.11½	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 42 E.	.11½	....	...	787
56. Long. 60° to 65° E.	Autumn	34	47	16	34	19	14	45	117	56	94	49	174	50	113	64	150	43	S. 78 56 W.	.28	S. 80½ W.	.26	373
57. Long. 65° to 70° E.	Autumn	96	96	35	76	24	67	38	100	55	154	58	223	92	223	102	175	61	N. 79 5 W.	.28	N. 89½ E.	.43	558
	Winter	3	13	1	11	0	9	9	11	4	26	9	22	1	18	7	13	6	S. 57 21 W.	.22	S. 23 W.	.07	54
58. Long. 65° to 75° E.	Spring	1	21	4	15	7	21	9	11	19	3	5	4	5	10	8	8	0	S. 79 34 E.	.21	N. 87 E.	.37	50
	Summer	14	5	0	7	2	4	7	12	11	13	6	26	6	21	5	13	6	S. 77 18 W.	.18	N. 43 W.	.02	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 70 14 W.	.17	....	...	1439
59. Long. 70° to 75° E.	Autumn	63	57	20	51	20	122	54	127	89	233	78	231	85	336	84	221	63	S. 79 40 W.	.31	N. 88½ W.	.14	645
	Winter	5	5	5	8	0	12	4	16	8	28	16	41	16	31	8	18	14	S. 68 47 W.	.38	S. 67½ W.	.20	78
60. Long. 75° to 80° E.	Autumn	24	26	8	15	12	37	9	59	17	72	30	66	52	67	39	110	22	N. 87 11 W.	.28	N. 68 W.	.11	222
61. Long. 75° to 85° E.	Spring	11	28	7	19	6	41	17	24	8	17	8	9	2	24	2	11	9	S. 73 20 E.	.19	S. 86 E.	.36	81
	Summer	8	4	2	6	6	17	3	15	3	34	22	45	24	40	19	42	12	S. 86 54 W.	.41	N. 88½ W.	.23	101
	Winter	9	11	10	19	7	26	12	26	4	35	20	24	17	25	24	32	20	S. 72 56 W.	.13	S. 78½ E.	.04	107
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	S. 81 8 W.	.18	....	...	743
62. Long. 80° to 85° E.	Autumn	4	17	1	20	6	8	18	53	16	66	41	108	51	83	41	130	34	S. 89 11 W.	.42	N. 5 W.	.34	232
63. Long. 85° to 90° E.	Spring	6	24	8	9	12	18	5	13	14	28	25	14	16	17	2	17	10	S. 40 15 W.	.14	S. 50 E.	.21	79
	Summer	0	5	0	5	0	9	1	1	1	12	9	5	6	8	6	13	1	N. 88 50 W.?	.25	N. 61 W.	.08	27
	Autumn	13	5	3	6	1	8	10	12	4	35	38	28	24	21	12	32	2	S. 72 52 W.	.42	S. 69 W.	.24	85
	Winter	12	7	5	16	9	27	2	17	5	8	6	12	5	39	14	19	11	N. 24 12 W.	.08	N. 52 E.	.18	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 10 W.	.18	....	...	262
64. Long. 90° to 95° E.	Spring	4	14	8	15	3	14	21	12	7	15	11	7	9	21	9	9	8	S. 10 4 E.	.06½	N. 89½ E.	.18	62
	Summer	1	2	0	2	1	10	1	10	3	32	29	20	15	30	12	24	2	S. 73 4 W.	.51	S. 75 W.	.32	65
	Autumn	6	32	4	12	3	25	12	9	14	64	32	47	11	52	29	29	6	S. 74 34 W.	.29	S. 84 W.	.10	129
	Winter	17	10	7	19	9	34	1	12	9	16	8	18	7	17	12	14	9	N. 53 8 E.	.04	N. 67 E.	.23	73
	The year[1]	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	S 69 59 W.	.19	....	...	329
65. Long. 95° to 100° E.	Spring	8	14	3	13	16	20	17	12	9	13	24	18	11	25	10	12	7	S. 34 27 W.	.10	N. 74 E.	.20	77
	Summer	2	7	0	0	8	8	0	3	9	31	16	40	11	17	12	12	0	S. 66 12 W.	.50	S. 73 W.	.22	59
	Autumn	0	21	2	4	3	8	5	19	14	36	15	54	32	48	15	13	1	S. 73 27 W.	.47	N. 88½ W.	.20	97
	Winter	1	8	3	13	13	51	21	31	22	24	2	27	10	35	22	17	23	S. 5 43 E.	.12	N. 86 E.	.26	108
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 44 W.	.28	....	...	341
66. Long. 105° to 110° E.	Spring	13	8	8	10	8	11	44	29	38	24	32	16	22	5	19	4	12	S. 5 30 W.	.34	N. 70 E.	.10	101
	Summer	0	0	1	0	2	1	0	5	3	0	9	3	5	4	5	2	1	S. 36 40 W.	.23	N. 4 W.	.19	14
	Autumn	16	7	5	0	11	23	28	40	86	31	45	24	81	18	27	4	15	S. 33 34 W.	.42	N. 78 W.	.11	154
	Winter	5	0	2	0	6	2	40	32	61	28	40	13	13	1	15	1	0	S. 9 45 W.	.63	S. 5 E.	.15	87
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 73 43 W.	.39	....	...	354
67. Long. 110° to 120° E.	Spring	38	9	13	11	57	28	136	66	174	52	78	50	63	4	23	7	8	S. 30 56 E.	.47	S. 81 E.	.22	273
	Summer	10	0	6	6	8	5	11	7	20	11	29	19	25	22	24	5	3	S. 53 38 W.	.38	N. 29 W.	.24	71
	Autumn	8	3	5	3	17	13	35	60	75	41	150	47	81	21	39	5	32	S. 38 22 W.	.58	S. 83½ W.	.18	196
	Winter	1	7	5	2	23	34	156	126	246	80	117	55	85	44	35	4	5	S. 70 56 W.	.60	S. 31½ E.	.19	342
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 22 44 W.	.47	....	...	882

[1] Computed from the resultants for the seasons.

(Nos. 68 to 71.) **Australia.**

Observed at the following places, viz.:—

Adelaide, South Australia, during the years 1859 to 1863 inclusive.

Buchsfelde, South Australia, by O. Schomburg, from January 1850, to June 1851, inclusive.

Freemantle, West Australia, during the years 1854 and 1855.

Sidney, New South Wales, at the Observatory, by W. Scott and George R. Smalley, during the years 1860 to 1863 inclusive, 1867 and 1868.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.
68. Freemantle.	January	0	5	5	7	5	8	0	1					
	February	0	3	5	5	2	9	3	1					
	March	0	6	3	8	2	8	2	2					
	April	0	4	5	8	4	4	2	3					
	May	1	6	9	8	1	4	0	2					
	June	1	13	6	4	2	1	1	2					
	July	1	8	2	2	4	5	2	7					
	August	1	8	3	2	1	5	4	7					
	September	1	3	7	2	3	4	8	2					
	October	1	4	3	3	7	4	6	3					
	November	0	1	7	1	4	10	4	3					
	December	0	1	5	2	4	12	5	2					
	Spring	1	16	17	24	7	16	4	7	...	S. 54° 15 E.	.33½	S. 76° E.	.20
	Summer	3	29	11	8	7	11	7	16	...	N. 37 36 E.	.20	N. 9½ E.	.31
	Autumn	2	8	17	6	14	18	18	8	...	S. 28 15 W.	.22	S. 75 W.	.18
	Winter	0	9	15	14	11	29	8	4	...	S. 0 7 W.	.36	S. 19 W.	.23
	The year	6	62	60	52	39	74	37	35	...	S. 26 25 E.	.16½		
69. Adelaide.[1]	January	4	3	2	5	4	7	2	4					
	February	4	2	2	6	4	6	1	3					
	March	5	7	2	4	4	5	3	1					
	April	5	10	3	4	2	3	2	1					
	May	8	12	1	1	2	3	2	2					
	June	8	14	2	1	2	1	1	1					
	July	10	8	1	1	2	3	2	4					
	August	6	12	2	1	1	3	1	5					
	September	7	10	1	1	1	4	3	3					
	October	4	8	2	2	3	4	4	4					
	November	3	7	1	2	3	9	2	3					
	December	3	4	1	3	4	10	3	3					
	Spring	18	29	6	9	8	11	7	4	...	N. 38 29 E.	.26½	N. 73 E.	.12
	Summer	24	34	5	3	5	7	4	10	...	N. 19 23 E.	.50	N. 21½ E.	.32
	Autumn	14	25	4	5	7	17	9	10	...	N. 13 3 W.	.17½	S. 88½ W.	.09
	Winter	11	9	5	14	12	23	6	10	...	S. 30 27 W.	.18	S. 23½ W.	.36
	The year	190	893	44	782	176	1008	99	456	...	S. 17 33 E.	.08½		
70. Buchsfelde.	Spring	25	84	88	76	147	63	25	44	...	S. 37 45 E.	.30	N. 78 E.	.13
	Summer	36	49	48	38	83	38	44	29	...	S. 21 42 E.	.13½	N. 25 W.	.14
	Autumn	15	50	20	22	80	49	13	16	...	S. 9 54 E.	.26	S. 88 W.	.06
	Winter	34	37	58	73	150	59	14	17	...	S. 21 41 E.	.43	S. 19½ E.	.10
	The year	...	...	...	...	...	...	...	...	...	S. 23 12 E.	.28		
71. Sidney.	January	1	9	6	4	7	2	1	1	0				
	February	1	7	5	4	6	2	1	1	1				
	March	1	7	6	4	5	2	3	2	1				
	April	1	3	4	3	4	4	6	4	1				
	May	1	2	1	2	2	3	12	7	1				
	June	2	2	1	1	2	4	11	7	0				
	July	2	1	1	1	2	2	11	10	1				
	August	1	2	1	2	3	3	11	7	1				
	September	2	5	3	3	2	2	7	5	1				
	October	1	6	4	3	4	3	5	4	1				
	November	1	7	6	4	6	2	2	1	1				
	December	1	8	7	3	6	2	2	2	0				
	Spring	3	12	11	9	11	9	21	13	3	S. 74 6 W.	.12	S. 69 W.	.07
	Summer	5	5	3	4	7	9	33	24	2	N. 78 47 W.	.52	N. 72 W.	.47
	Autumn	4	18	13	10	12	7	14	10	3	S. 88 9 E.	.07½	N. 88 E.	.13
	Winter	3	24	18	11	19	6	4	4	1	S. 75 28 E.	.36½	S. 78 E.	.41
	The year	15	59	45	34	49	31	72	51	9	S. 82 52 W.	.05		

[1] Months and seasons for the last three years only.

(Nos. 72 to 77.) **Pacific Ocean**, west of longitude 180°.

From observations for an aggregate period of over $5\frac{1}{2}$ years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
72 Long. 151° to 160° E.	Spring	21	3	25	18	47	13	31	13	31	8	21	4	7	0	6	3	7	S. 66° 20′ E.	.37	S. $63\frac{1}{2}$° E.	.17	86
	Summer	9	1	10	0	1	0	10	10	12	3	21	5	12	2	4	4	5	S. 30 58 W.	.25	S. $53\frac{1}{2}$ W.	.34	36
	Autumn	86	25	32	10	25	5	43	6	66	13	15	2	8	0	16	10	15	N. 66 36 E.	.18	N. 8 W.	.14	126
	Winter	56	17	46	14	66	14	85	13	44	7	11	8	5	7	14	1	13	S. 84 16 E.	$.37\frac{1}{2}$	N. 79 E.	.19	140
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	S. 68 11 E.	.20	....	...	388
73. Long. 160° to 165° E.	Winter	20	6	11	6	38	5	22	5	15	0	8	0	0	0	9	0	4	S. 88 23 E.	.42	N. 70 E.	.33	50
74. Long. 165° to 170° E.	Winter	25	9	24	5	47	6	36	12	46	14	11	0	19	3	36	2	11	S. 60 46 E.	.17	N. 45 E.	.05	102
75. Long. 160° to 170° E.	Spring	14	1	27	14	23	9	25	10	16	5	28	6	14	6	11	5	7	S. 56 30 E.	$.15\frac{1}{2}$	N. 30 E.	.04	74
	Summer	8	8	20	7	28	20	14	26	26	17	24	12	13	10	6	10	3	S. 24 26 E.	.24	S. $6\frac{1}{2}$ W.	$.09\frac{1}{2}$	84
	Autumn	16	1	8	5	18	5	27	9	29	6	32	10	11	7	26	11	37	S. 26 58 W.	.16	S. $83\frac{1}{2}$ W.	.18	86
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 42 5 E.	$.16\frac{1}{2}$	....	...	396
76. Long. 170° to 175° E.	Spring	17	6	51	19	31	21	26	22	61	21	41	9	48	3	11	3	11	S. 18 36 E.	.22	S. $\frac{1}{2}$ W.	.08	134
	Summer	14	6	13	9	12	9	35	13	28	10	19	1	21	3	5	0	7	S. 22 45 E.	.28	S. 15 E.	13	69
	Autumn	17	22	10	27	19	13	14	5	0	6	16	9	30	2	10	7	2	N. 34 0 E.	.17	N. 5 E.	.28	70
	Winter	50	31	54	17	91	47	53	43	104	90	107	29	48	12	58	16	22	S. 3 24 E.	$.20\frac{1}{2}$	S. 40 W.	.10	291
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	S. 28 6 E.	.15	....	...	564
77. Long. 175° E. to 180°.	Spring	72	14	40	17	22	22	96	24	64	21	97	22	55	20	29	16	27	S. 16 24 W.	.15	S. 83 W.	.13	220
	Summer	5	7	10	18	14	7	26	5	6	7	45	5	5	1	10	5	5	S. 48 41 E.	.25	S. 68 E.	.11	69
	Autumn	22	6	16	9	19	15	9	12	27	13	19	17	23	26	31	8	21	S. 89 10 W.	$.13\frac{1}{2}$	N. 61 W.	.26	97
	Winter	24	6	56	43	213	66	138	22	74	20	51	5	83	14	21	3	15	S. 61 18 E.	.40	S. 76 E.	.27	285
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 35 24 E.	$.15\frac{1}{2}$	....	...	671

[1] Computed from the resultants for the seasons.

ZONE No. 26.

Latitude 35° to 40° South.

The data for the study of the winds of this zone consist of observations made at 19 stations on land, for an aggregate period of about 64 years; at sea for about 95 years 6 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	nearly 20 years.
Atlantic Ocean,	....	21 years 6 months.
Indian Ocean,	....	over 54 years.
Australia,	14	31 years 4 months.
New Zealand,	5	about 33 years.

(Nos. 1 to 26.) **Pacific Ocean**, east of longitude 180°.

From observations for an aggregate period of nearly 17 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
1. Long. 175° W. to 180°	Spring	6	17	13	0	12	0	8	2	2	3	18	2	25	3	6	10	4	N. 41° 28′ W.	.20	N. 49° W.	.09	44
	Autumn	44	23	17	0	19	4	6	5	13	5	15	6	22	7	21	5	0	N. 13 6 W.	$.28\frac{1}{2}$	North.	.18	71
	Winter	39	23	33	17	14	7	18	5	11	3	14	1	13	0	9	8	5	N. 39 13 E.	.35	N. 57 E.	.34	74
2. Long. 170° to 175° W.	Autumn	107	34	39	13	61	28	16	16	16	26	71	23	126	70	114	19	27	N. 51 45 W.	.32	N. 60 W.	.20	269

(Nos. 3 to 26.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
3. Long. 165° W. to 180°	Summer	9	3	4	1	0	4	9	8	10	9	8	0	4	8	3	8	0	S. 33° 14′ W.	.16	S. 6° W.	.22½	30
	The year[1]	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	N. 35 34 W.	.11	....	...	783
4. Long. 165° to 175° W.	Spring	12	4	33	11	18	9	6	4	10	5	3	4	10	11	11	18	18	N. 39 22 E.	.24½	N. 65 E.	.31	59
	Winter	33	10	7	4	16	9	8	10	30	6	35	12	27	2	23	3	3	S. 71 44 W.	.17	S. 35 W.	.23	80
5. Long. 165° to 170° W.	Autumn	61	7	20	7	14	7	16	13	25	21	36	31	56	9	99	30	14	N. 62 9 W.	.36	N. 72½ W.	.34	156
6. Long. 160° to 165° W.	Autumn	78	22	54	10	22	21	41	17	72	46	141	24	146	58	174	46	22	N. 81 32 W.	.35	N. 75 E.	.27	331
	Winter	46	11	29	33	46	16	44	22	52	18	38	14	23	19	29	15	18	S. 56 55 E.	.11	S. 56½ E.	.19	158
7. Long. 150° to 165° W.	Spring	27	4	18	8	5	8	6	9	21	17	29	13	24	1	15	6	2	S. 67 11 W.	.18	S. 39½ W.	.15	71
8. Long. 155° to 160° W.	Autumn	32	9	18	1	38	12	33	13	41	14	56	21	27	16	56	12	13	S. 61 5 W.	.15	N. 7 E.	.23	137
	Winter	56	15	29	13	29	17	38	2	34	17	38	31	65	37	53	14	18	N. 68 54 W.	.20	N. 79 W.	.12	169
9. Long. 150° to 155° W.	Autumn	18	12	18	0	11	4	16	2	20	12	33	5	27	7	16	13	3	S. 85 8 W.	.18	S. 60 W.	.12½	72
	Winter	26	5	19	18	36	14	26	6	19	8	34	18	39	17	44	14	21	N. 65 45 W.	.10	S. 69 W.	.18½	121
10. Long. 140° to 150° W.	Winter	21	7	9	10	26	14	22	16	13	2	16	8	28	12	2	16	17	S. 63 1 E.	.06	S. 58½ E.	.14½	80
11. Long. 120° to 165° W.	Summer	15	29	7	8	4	8	15	9	7	6	8	16	10	7	15	14	11	N. 11 52 W.	.16	N. 18 E.	.12	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 55 49 W.	.08½	....	...	1437
12. Long. 120° to 150° W.	Spring	6	0	7	15	14	11	16	4	4	9	10	4	10	6	17	1	8	S. 59 18 E.?	.11	S. 58 E.	.05½	47
	Autumn	38	17	33	9	32	16	18	5	6	5	8	16	18	10	18	6	6	N. 31 42 E.	.26	N. 50 E.	.08	87
13. Long. 120° to 140° W.	Winter	31	18	26	3	8	6	18	3	6	11	15	10	50	11	55	22	7	N. 50 19 W.	.38	N. 48½ W.	.08	100
14. Long. 110° to 120° W.	Winter	16	4	4	10	7	1	8	1	13	1	23	7	34	31	20	8	8	N. 75 12 W.	.38	N. 86½ W.	.09	68
15. Long. 100° to 120° W.	Spring	13	8	4	1	7	1	4	0	8	3	25	14	12	11	23	3	8	N. 79 38 W.?	.38	S. 54 W.	.14	48
	Autumn	25	11	11	4	4	8	0	9	4	0	22	1	27	24	27	25	7	N. 44 40 W.	.43	N. 16½ W.	.16	70
16. Long. 95° to 120° W.	Summer	20	15	36	5	15	1	5	6	6	7	12	10	13	8	22	13	1	N. 3-44 W.	.29	N. 60 E.	.28	65
17. Long. 100° to 110° W.	Winter	21	15	15	5	5	0	10	8	12	0	9	6	38	25	37	13	7	N. 48 36 W.	.40	N. 20 W.	.13	75
18. Long. 85° to 120° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 59 15 W.	.30	....	...	902
19. Long. 95° to 100° W.	Winter	18	14	11	4	3	1	0	13	8	7	11	0	23	5	5	14	3	N. 41 31 W.?	23	N. 79 E.	.10	40
20. Long. 95° to 100° W.	Spring	17	9	9	5	5	3	4	4	7	4	15	8	17	12	29	22	4	N. 46 46 W.	.39	N. 13½ W.	.11	58
	Autumn	19	4	12	6	2	1	11	3	9	0	29	10	20	15	37	23	6	N. 60 26 W.	.40	N. 65 W.	.08	69
21. Long. 90° to 95° W.	Winter	23	6	12	8	14	1	3	2	10	12	11	22	24	10	31	16	12	N. 56 5 W.	.32	N. 19 W.	.03	72
22. Long. 85° to 95° W.	Summer	8	1	11	3	3	0	1	7	16	12	26	35	15	14	4	5	1	S. 63 26 W.	.49	S. 25½ W.	.39	54
23. Long. 85° to 90° W.	Spring	21	25	8	26	0	12	8	4	6	11	11	12	14	18	17	32	1	N. 17 18 W.	.37	N. 36 E.	.23	75
	Autumn	7	13	2	14	8	0	6	13	3	12	5	21	10	29	4	30	8	N. 58 47 W.	.27	S. 63½ E.	.03	62
	Winter	15	34	21	14	6	8	7	30	39	46	19	49	35	44	16	36	15	N. 78 38 W.	.25	N. 7 W.	.10	145
24. Long. 80° to 85° W.	Spring	35	48	15	24	10	13	48	49	55	71	65	99	47	92	32	67	39	S. 72 17 W.	.28	N. 54 E.	.04	270
	Summer	16	11	8	4	1	0	1	3	4	9	10	13	17	6	9	17	5	N. 60 44 W.?	.37	N. 4½ W.	.29	47
	Autumn	19	15	2	14	11	9	16	35	55	82	42	56	43	39	19	38	7	S. 51 3 W.	.40	S. 5 W.	.14	167
	Winter	17	38	11	11	7	18	21	114	120	143	64	141	58	67	68	70	42	S. 47 21 W.	.42	S. 2½ W.	.18	337
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 70 13 W.	.32	....	...	821
25. Long. 75° to 80° W.	Spring	47	84	17	19	10	12	22	74	118	180	78	102	66	128	60	100	40	S. 68 40 W.	.32	N. 51 E.	.12	386
	Summer	12	36	11	3	6	9	8	19	28	62	36	41	29	38	40	63	11	N. 89 12 W.	.33	N. 16 E.	.20	151
	Autumn	33	30	1	0	1	5	16	44	104	178	108	118	69	102	54	75	27	S. 61 41 W.	.57	S. 54½ W.	.14	288
	Winter	38	15	5	11	3	18	19	105	289	459	207	191	105	182	91	92	60	S. 45 16 W.	.58	S. 7 W.	.22	630
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 64 14 W.	.43	....	...	1455
26. Long. 73° to 75° W.	Spring	11	113	8	2	7	0	1	18	24	200	39	56	11	40	28	41	40	S. 65 13 W.	.30	N. 30 E.	.09	213
	Summer	16	19	3	0	6	4	0	4	12	26	17	15	6	22	18	25	11	N. 71 52 W.	.33	N. ½ E.	30	68
	Autumn	4	28	0	4	0	1	1	26	25	111	41	24	8	20	21	22	14	S 45 11 W.	.47	S. 7½ W.	.13½	117
	Winter	21	37	1	0	0	8	10	89	113	366	84	109	20	54	19	64	50	S. 34 49 W.	.58	S. 3½ W.	.28	318
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 56 37 W.	.37½	....	...	746

[1] Computed from the resultants for the seasons.

(Nos. 27 to 45.) **Atlantic Ocean.**

From observations for an aggregate period of 21½ years, collected and classified, from the logs of different sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent, as follows, viz. :—

Place of observation.	Time of the year	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
27. Long. 55° to 60° W.	Spring	7	9	8	1	0	0	10	8	11	9	22	6	11	16	13	9	7	S. 81° 13′ W.?	.30	....	...	49
28. Long. 50° to 60° W.	Spring	52	17	26	3	13	8	39	19	42	22	43	15	48	28	42	17	10	S. 85 20 W.	.21	N. 89° W.	.20	148
	Summer	8	1	19	10	1	1	12	4	16	0	10	4	9	2	1	1	0	S. 54 57 E.?	.15	S. 62½ E.	.14½	33
	Autumn	30	18	49	24	26	13	33	15	41	25	24	17	15	14	12	9	16	S. 70 38 E.	.14	S. 78½ E.	.14	127
	Winter	52	18	47	7	16	14	35	18	22	20	51	12	38	14	39	17	14	N. 45 0 W.	.10	N. 36½ W.	.15	142
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 17 14 W.	.02	....	...	450
29. Long. 50° to 55° W.	Spring	45	8	18	2	13	8	29	11	31	13	21	9	37	12	29	8	3	N. 84 58 W.	.13	N. 78 W.	.01	99
30. Long. 45° to 50° W.	Spring	64	16	35	15	13	10	28	9	38	12	53	15	44	22	60	29	25	N. 53 8 W.	.21	N. 1½ E.	.07	165
	Summer	12	4	22	10	5	4	8	8	10	14	41	20	27	8	20	5	7	S. 73 44 W.	.28	S. 35 W.	.17	75
	Autumn	61	37	77	32	29	12	26	29	47	56	95	38	44	51	74	54	20	N. 66 11 W.	.17	N. 59 E.	.02	261
	Winter	106	31	70	30	58	24	33	26	57	31	97	24	64	18	83	61	25	N. 32 53 W.	.14	N. 58½ E.	.11	279
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 35 W.	.18	....	...	780
31. Long. 40° to 45° W.	Spring	18	14	8	1	6	4	21	3	18	14	68	14	24	6	46	7	15	S. 74 54 W.	.34	S. 53 W.	.14	96
	Summer	15	9	6	2	10	1	8	9	8	7	16	11	18	4	20	4	6	N. 83 56 W.	.21	N. 21 E.	.03	51
	Autumn	53	23	53	13	37	10	27	21	29	55	76	57	45	45	63	23	19	N. 89 11 W.	.21	N. 22 E.	.04	216
	Winter	35	16	31	11	40	11	22	13	35	27	39	25	37	33	53	22	8	N. 75 42 W.	.15	N. 62½ E.	.08½	153
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 2 W.	.22	....	...	516
32. Long. 35° to 40° W.	Spring	11	2	1	6	3	5	7	2	7	10	15	11	4	1	18	13	9	N. 87 36 W.?	.22	N. 28 E.	.04	42
	Summer	5	3	4	3	9	6	4	5	14	12	28	15	21	21	18	9	3	S. 74 13 W.	.40	S. 46 W.	.14½	60
	Autumn	24	11	10	7	8	6	16	7	14	13	37	24	16	14	22	9	6	S. 81 33 W.	.23	S. 65½ E.	.06	81
	Winter	41	7	31	5	7	2	13	6	31	22	43	21	51	21	41	35	17	N. 73 53 W.	.32	N. 15 W.	.10	131
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 87 47 W.	.28	....	...	314
33. Long. 30° to 35° W.	Autumn	12	4	9	3	4	7	9	2	5	11	21	11	23	5	20	10	0	N. 85 56 W.	.31	S. 2 W.	.20½	52
	Winter	21	21	6	2	5	6	11	0	7	4	7	7	6	2	14	34	0	N. 10 51 W.	.39	N. 56 E.	.27	51
34. Long. 25° to 30° W.	Autumn	14	3	5	1	16	0	8	0	13	3	34	8	19	9	16	6	4	S. 80 50 W.	.30	S. 1 E.	.28	53
	Winter	52	9	4	2	12	16	26	10	5	8	25	11	17	12	22	42	7	N. 31 16 W.	.23	S. 80 E.	.19	93
35. Long. 15° to 35° W.	Spring	11	2	3	1	3	2	2	0	4	7	9	21	6	11	22	10	1	N. 72 7 W.?	.49	S. 64½ W.	.18	38
	Summer	16	7	12	0	2	2	2	1	3	3	8	2	8	16	15	15	0	N. 33 49 W.?	.50	N. 8 E.	.19	37
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 52 52 W.	.38	....	...	1419
36. Long. 20° to 25° W.	Autumn	181	26	64	29	47	26	82	31	65	33	172	66	135	47	151	48	45	N. 17 16 W.	.24	East.	.25	416
	Winter	84	8	47	32	13	6	13	7	18	13	42	24	45	45	72	37	16	N. 36 22 W.	.37	N. 51 E.	.11	174
37. Long. 15° to 20° W.	Autumn	119	31	23	25	24	6	17	21	50	20	61	38	89	31	96	42	17	N. 54 39 W.	.33	S. 40 E.	.05	237
	Winter	170	25	39	2	7	1	5	2	27	10	94	24	120	63	123	67	22	N. 50 44 W.	.55	N. 46½ W.	.19	267
38. Long. 10° to 15° W.	Summer	5	10	1	4	11	11	4	6	8	10	13	19	28	26	10	34	2	N. 74 44 W.	.35	S. 16½ W.	.03½	67
	Autumn	33	56	8	19	11	39	9	62	17	71	42	104	42	139	92	248	7	N. 59 18 W.	.42	N. 21 W.	.09	333
	Winter	24	23	14	14	4	14	11	37	29	64	31	85	47	94	46	87	25	N. 85 37 W.	.40	S. 48½ W.	.11½	216
39. Long. 5° to 15° W.	Spring	3	9	6	4	1	7	5	12	2	2	5	3	14	20	8	8	3	N. 60 37 W.?	.22	S. 83 E.	.14	37
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 69 12 W.	.35	....	...	1134
40. Long. 5° to 10° W.	Summer	9	8	3	1	3	3	0	4	5	11	19	12	14	31	14	24	4	N. 69 46 W.	.43	N. 72 W.	.07	55
	Autumn	29	67	17	31	12	52	19	30	29	68	36	71	37	94	43	111	9	N. 64 17 W.	.24	S. 80½ E.	.08	252
	Winter	28	21	5	16	3	10	2	19	2	31	36	67	40	102	46	84	9	N. 67 56 W.	.52	N. 65½ W.	.14	174
41. Long. 0° to 5° W.	Spring	6	7	0	4	0	0	1	4	1	5	6	9	5	16	13	14	1	N. 58 35 W.	.51	N. 21 W.	.10	31
	Summer	7	12	7	5	1	9	10	5	10	15	14	14	21	36	8	29	2	N. 68 10 W.?	.35	S. 61 E.	.04½	68
	Autumn	23	94	24	17	9	24	15	45	18	100	26	92	39	109	55	104	7	N. 70 26 W.	.31	S. 58 E.	.12	207
	Winter	34	22	14	15	1	19	5	25	18	101	44	97	67	205	123	144	15	N. 72 38 W.	.55	S. 89 W.	.12	316
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 5 W.	.43	....	...	682
42. Long. 0° to 5° E.	Spring	3	10	1	3	8	3	2	3	0	4	8	14	13	18	10	4	0	N. 72 48 W.?	.38	N. 42 E.	.04	35
	Summer	12	4	4	9	5	4	2	15	7	14	6	25	22	39	7	33	1	N. 74 46 W.	.40	N. 12½ E.	.02	70
	Autumn	22	45	18	17	2	18	8	26	27	63	19	75	45	88	26	94	9	N. 75 23 W.	.36	N. 44 E.	.10	201
	Winter	10	12	8	10	5	24	7	50	28	87	18	117	43	166	60	83	26	S. 87 56 W.	.47	S. 38 W.	.12	251
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 18 W.	.40	....	...	557
43. Long. 5° to 10° E.	Spring	4	8	5	8	4	1	3	4	1	6	10	12	6	12	10	6	0	N. 66 2 W.?	.26	N. 58 E.	.15½	33
	Summer	12	5	2	9	3	4	6	9	15	17	10	19	19	45	17	32	2	N. 77 0 W.	.40	N. 60 W.	.21	75
	Autumn	30	29	17	15	24	26	7	62	28	87	27	76	47	106	34	92	22	S. 88 26 W.	.30	S. 68½ E.	.07	243
	Winter	10	20	9	9	5	16	9	28	19	104	74	137	89	151	59	66	11	S. 82 33 W.	.56	S. 68 W.	.21	272
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 29 W.	.37	....	...	623
44. Long. 10° to 15° E.	Spring	5	7	2	5	4	14	17	18	2	13	7	8	2	14	4	5	1	S. 14 53 E.?	.23	East.	.29	43
	Summer	11	16	1	4	4	16	16	16	14	40	13	24	14	36	16	14	5	S. 60 40 W.	.28	N. 1½ E.	.08½	87
	Autumn	13	10	13	16	10	56	47	63	39	118	64	96	50	133	12	40	19	S. 47 30 W.	.39	S. 42½ W.	.06	266
	Winter	5	5	2	3	11	3	25	69	32	51	49	106	83	73	15	34	33	S. 59 30 W.	.51	S. 79½ W.	.19	300
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 47 44 W.	.33	....	...	596
45. Long. 15° to 20° E.	Spring	13	20	4	19	12	72	35	34	24	33	13	41	20	32	13	17	8	S. 12 55 W.	.21	S. 75 E.	.12	137
	Summer	9	14	14	17	19	27	22	38	21	38	26	49	38	70	23	23	11	S. 63 1 W.	.25	N. 43 W.	.13	153
	Autumn	13	29	16	31	32	56	29	71	40	108	39	124	63	125	48	49	20	S. 60 21 W.	.30	S. 75 E.	.10	298
	Winter	2	5	4	7	19	56	38	65	24	53	26	56	46	108	21	30	7	S. 45 46 W.	.32	S. 51½ W.	.09	189
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 43 54 W.	.24	....	...	777

[1] Computed from the resultants for the seasons.

(Nos. 46 to 71.)

Indian Ocean.

From observations for an aggregate period of over 54 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
46. Long. 20° to 25° E.	Spring	19	66	33	82	61	115	55	70	25	107	65	209	133	192	51	48	47	S. 71° 3′ W.	.21	S. 89° E.	.10	459
	Summer	36	53	26	41	20	29	9	24	32	79	78	202	161	274	53	96	23	N. 83 18 W.	.51	N. 59 W.	.25	412
	Autumn	30	89	35	110	79	155	53	92	89	171	112	220	141	283	67	70	32	S. 62 32 W.	.23	S. 66 E.	.10	609
	Winter	16	47	41	117	77	106	38	94	78	164	101	291	165	243	38	57	63	S. 59 50 W.	.30	S. 21½ E.	.09	579
	The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	S. 77 11 W.	.30	....	...	2059
47. Long. 25° to 30° E.	Spring	11	83	48	72	34	40	24	46	22	61	35	92	48	105	16	28	21	N. 77 51 W.	.08	S. 88½ E.	.16	262
	Summer	26	83	40	21	1	21	8	31	8	58	45	99	78	122	47	66	12	N. 69 0 W.	.39	N. 49 W.	.18	255
	Autumn	24	113	56	101	16	104	42	117	45	153	89	207	123	231	49	102	28	S. 77 24 W.	.23	S. 4 E.	.07	533
	Winter	23	87	40	70	25	66	27	50	30	109	68	174	79	152	34	70	39	S. 83 28 W.	.24	S. 12 W.	.05	381
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 4 W.	.23	....	...	1431
48. Long. 30° to 35° E.	Spring	8	55	30	29	5	13	3	37	10	64	29	45	18	44	13	27	10	S. 84 22 W.	.14	S. 82 E.	.07	147
	Summer	42	70	15	20	12	18	14	44	31	67	36	55	47	88	35	42	8	N. 81 44 W.	.25	N. 44 W.	.05	215
	Autumn	58	177	73	107	38	100	49	130	58	192	101	182	106	175	67	161	30	N. 88 23 W.	.14	N. 83½ E.	.07	601
	Winter	24	36	20	25	6	21	14	59	20	38	40	124	28	91	19	50	13	S. 81 50 W.	.31	S. 68 W.	.10	209
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 46 W.	.21	....	...	1172
49. Long. 35° to 40° E.	Spring	20	33	9	15	10	15	8	21	15	35	26	35	30	55	16	29	3	N. 82 29 W.	.26	S. 62½ E.	.04	125
	Summer	35	47	15	5	2	9	6	16	20	41	28	22	38	55	24	37	5	N. 69 55 W.	.32	N. 6 W.	.06	135
	Autumn	88	156	34	59	16	46	27	65	33	144	79	147	102	191	56	132	28	N. 72 10 W.	.30	N. 11 E.	.04	468
	Winter	21	47	26	23	4	23	14	29	13	53	50	102	60	62	18	41	1	S. 85 16 W.	.33	S. 22½ W.	.08	196
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 53 W.	.30	....	...	924
50. Long. 40° to 45° E.	Spring	18	37	14	10	5	16	12	30	26	54	25	19	31	59	15	19	5	S. 72 55 W.	.23	S. 38 E.	.13	132
	Summer	20	35	9	5	5	13	10	20	36	43	28	43	46	78	39	46	4	N. 84 18 W.	.38	N. 88 W.	.08	160
	Autumn	56	119	29	31	15	52	14	65	25	129	50	187	52	146	48	130	11	N. 78 39 W.	.29	N. 35 E.	.03	386
	Winter	23	37	5	9	1	15	6	21	18	33	22	44	28	59	8	34	4	N. 71 5 W.	.34	N. 16½ W.	.08	122
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 83 28 W.	.30	....	...	800
51. Long. 45° to 50° E.	Spring	21	40	2	9	6	20	10	36	18	46	23	31	24	50	35	29	6	S. 86 6 W.	.24	S. 2 E.	.07½	135
	Summer	26	45	11	17	5	8	10	27	16	54	18	47	22	59	29	39	2	N. 76 7 W.	.28	N. 83 W.	.03	145
	Autumn	41	68	21	32	13	39	13	40	36	113	45	126	45	129	65	130	13	N. 78 4 W.	.32	N. 86½ W.	.07	323
	Winter	18	63	3	15	6	18	9	45	13	36	11	32	6	51	18	61	9	N. 46 21 W.	.18	N. 61½ E.	.12½	138
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 24 W.	.25	....	...	741
52. Long. 50° to 55° E.	Spring	16	27	7	15	2	34	21	31	26	52	27	44	22	63	22	31	8	S. 64 36 W.	.24	S. 30½ E.	.14½	149
	Summer	24	25	6	3	4	13	9	4	16	49	33	41	21	54	20	45	2	N. 84 39 W.	.39	N. 81 W.	.10	123
	Autumn	62	65	14	41	17	32	19	81	24	99	50	133	70	191	28	125	20	N. 81 12 W.	.33	N. 49½ W.	.05	357
	Winter	18	45	12	26	2	17	12	39	9	59	20	40	25	49	31	79	5	N. 65 30 W.	.24	N. 43½ E.	.10	163
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 0 W.	.29	....	...	792
53. Long. 55° to 60° E.	Spring	20	44	13	7	7	13	6	8	20	35	13	30	9	45	23	23	0	N. 60 42 W.	.24	N. 68 E.	.12	105
	Summer	33	21	7	7	5	5	11	18	8	38	29	38	25	67	24	25	4	N. 81 36 W.	.36	S. 81 W.	.04	122
	Autumn	72	86	41	118	26	109	30	233	73	229	102	331	95	342	117	396	45	N. 86 25 W.	.29	S. 28 E.	.05	815
	Winter	37	44	12	27	6	20	5	70	15	73	47	112	63	143	49	97	17	N. 82 50 W.	.39	S. 79 W.	.08	279
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 10 W.	.32	....	...	1321
54. Long. 60° to 65° E.	Spring	18	39	11	8	2	3	12	12	25	41	19	43	15	39	21	30	15	N. 84 52 W.	.28	S. 74½ E.	.14	118
	Summer	22	15	7	0	1	7	1	17	12	48	26	45	27	66	20	34	2	N. 89 46 W.	.48	S. 47 W.	.09	117
	Autumn	69	79	25	52	23	70	36	137	66	228	108	298	181	452	160	342	46	N. 75 31 W.	.44	N. 14 W.	.05	791
	Winter	49	62	19	34	5	41	15	45	32	150	51	164	48	230	72	176	30	N. 76 53 W.	.48	N. 49½ W.	.07	408
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 81 30 W.	.42	....	...	1434
55. Long. 65° to 70° E.	Spring	16	22	5	13	3	12	2	18	11	43	20	33	17	58	22	47	3	N. 77 42 W.	.35	S. 41 E.	.10	115
	Summer	9	13	6	1	0	2	3	21	9	34	21	52	35	61	15	33	2	S. 87 31 W.	.53	S. 80 W.	.13	106
	Autumn	44	85	19	37	13	31	32	55	58	139	34	208	101	290	86	185	37	N. 81 17 W.	.36	N. 43 E.	.06	485
	Winter	13	52	10	18	8	26	23	55	18	116	55	125	59	161	72	133	22	N. 84 25 W.	.39	N. 24 E.	.04	332
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 28 W.	.45	....	...	1038
56. Long. 70° to 75° E.	Spring	20	28	8	4	5	28	6	18	18	43	36	48	38	82	32	37	5	N. 87 18 W.	.38	S. 80 E.	.08	152
	Summer	13	19	0	3	0	1	1	15	4	45	17	75	35	68	10	18	3	S. 84 6 W.	.59	S. 54½ W.	.16	109
	Autumn	23	51	10	30	16	34	14	41	30	107	73	138	92	207	92	145	39	N. 81 38 W.	.44	N. 33 E.	.04	381
	Winter	39	71	5	35	12	24	6	58	23	105	49	219	99	184	90	204	41	N. 76 0 W.	.45	N. 15½ E.	.08	421
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 58 W.	.46	....	...	1063
57. Long. 75° to 80° E.	Spring	23	35	11	7	1	8	6	24	25	96	22	67	41	94	41	77	7	N. 86 0 W.	.43	N. 61 E.	.06	195
	Summer	30	35	3	14	2	6	8	24	27	130	71	140	102	160	92	85	12	S. 89 17 W.	.56	S. 82½ W.	.08	314
	Autumn	13	29	13	15	12	11	21	44	22	194	90	159	112	184	77	128	6	S. 81 30 W.	.52	S. 24½ W.	.10½	377
	Winter	32	77	13	30	5	33	13	52	44	99	70	215	77	143	54	193	25	N. 84 12 W.	.42	N. 57 E.	.07	398
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 38 W.	.48	....	...	1284
58. Long. 80° to 85° E.	Spring	25	19	6	9	9	16	4	27	19	22	6	49	15	43	23	55	4	N. 68 1 W.	.29	N. 55 E.	.21	117
	Summer	11	6	1	3	0	6	2	7	7	46	20	50	24	31	13	25	3	S. 75 59 W.	.56	S. 40 W.	.16	85
	Autumn	14	20	3	5	11	4	11	19	14	41	36	93	33	98	35	59	3	N. 86 57 W.	.51	N. 62 W.	.07	166
	Winter	12	29	11	15	5	17	10	35	11	71	41	146	51	78	27	80	10	S. 83 44 W.	.45	S. 13 W.	.04	216
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 22 W.	.44	....	...	584

[1] Computed from the resultants for the seasons.

(Nos. 59 to 71.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
59. Long. 85° to 90° E.	Spring	19	21	10	5	0	5	1	13	7	19	17	29	16	40	19	45	2	N. 61° 1′ W.	.43	N. 26½°E.	.21	89
	Summer	6	8	4	0	0	6	0	8	5	36	24	39	22	25	11	17	1	S. 74 43 W.	.55	S. 19½ W.	.18	71
	Autumn	8	12	0	7	0	4	2	20	6	24	29	71	40	70	42	53	6	N. 82 27 W.	.58	N. 65 W.	.11	131
	Winter	22	42	3	10	2	20	16	15	13	68	31	94	39	73	22	39	2	S. 84 29 W.	.41	S. 43 E.	.18	170
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 87 0 W.	.47	....	...	461
60. Long. 90° to 95° E.	Spring	24	24	1	3	1	5	12	11	4	10	16	14	11	17	4	18	4	N. 53 5 W.	.27	N. 69 E.	.27	60
	Autumn	1	6	3	4	3	10	7	15	4	27	33	85	42	44	27	21	8	S. 77 30 W.	.57	S. 22½ W.	.19	113
	Winter	10	28	8	11	2	7	0	23	6	47	41	102	24	66	19	36	16	S. 83 35 W.	.47	S. 9½ E.	.10	148
61. Long. 90° to 100° E.	Summer	6	5	0	1	1	0	0	1	2	7	13	25	11	19	10	9	1	N. 85 33 W.?	.63	S. 89 W.	.14	37
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 19 W.	.49	....	...	606
62. Long. 95° to 100° E.	Spring	13	25	3	7	1	1	1	1	2	17	5	12	3	8	9	15	3	N. 31 43 W.?	.34	N. 52 E.	.46½	42
	Autumn	4	18	0	0	1	1	0	15	0	17	13	70	32	60	17	37	4	N. 82 23 W.	.63	N. 76 W.	.17	96
	Winter	8	10	1	4	2	6	1	12	4	46	18	85	24	52	27	25	5	S. 82 55 W.	.58	S. 10½ E.	.18	110
63. Long. 105° to 110° E.	Spring	1	5	4	1	6	5	0	0	4	23	3	31	10	15	2	9	4	S. 72 2 W.	.45	N. 26½ W.	.09	41
	Autumn	16	17	1	10	1	38	31	28	32	76	81	159	52	142	21	61	14	S. 75 34 W.	.62	N. 79 W.	.25	260
	Winter	6	15	3	4	7	16	8	10	16	57	30	88	18	86	19	33	3	S. 80 32 W.	.49	N. 46 W.	.18	140
64. Long. 105° to 115° E.	Summer	4	0	0	1	0	11	8	14	10	8	15	33	8	20	4	13	10	S. 57 5 W.	.42	S. 11½ E.	.03	53
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 60 30 W.	.41	....	...	1138
65. Long. 110° to 115° E.	Spring	11	6	10	6	1	39	20	19	7	14	22	39	25	27	6	14	5	S. 44 40 W.	.22	N. 77 E.	.22	91
	Autumn	6	16	5	25	8	42	34	77	44	84	86	235	57	129	46	55	20	S. 61 57 W.	.48	S. 71½ W.	.07	320
	Winter	4	2	2	16	26	86	44	84	63	75	44	100	17	54	13	26	13	S. 10 53 W.	.42	S. 53 E.	.37	223
66. Long. 115° to 120° E.	Spring	28	6	20	8	23	8	30	10	24	18	71	55	70	26	23	13	7	S. 68 37 W.	.35	S. 41 E.	.06	147
	Summer	12	4	8	0	2	0	3	1	20	2	48	19	38	28	29	7	9	S. 86 51 W.	.55½	N. 75 W.	.19	77
	Autumn	120	13	64	53	74	22	40	13	133	56	183	161	329	174	304	99	42	N. 79 47 W.	.43	N. 20 W.	.16	627
	Winter	18	5	38	37	63	62	64	31	109	35	110	101	135	47	47	19	23	S. 36 11 W.	.29	S. 52 E.	.25	315
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 77 55 W.	.38	....	...	1166
67. Long. 120° to 125° E.	Spring	10	8	1	1	8	4	3	3	4	5	23	18	45	9	6	4	10	S. 83 35 W.	.46	S. 29 W.	.12	54
	Summer	10	6	1	2	2	0	0	0	4	7	5	6	22	6	16	14	3	N. 57 38 W.	.51½	N. 13 W.	.22	35
	Autumn	115	18	40	19	21	23	17	14	26	18	117	119	285	98	117	26	18	N. 79 58 W.	.52	N. 76 W.	.12	364
	Winter	39	26	29	19	47	25	33	10	48	26	52	57	71	28	43	3	16	S. 65 31 W.	.16	S. 62 E.	.27	191
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 80 52 W.	.39	....	...	644
68. Long. 125° to 130° E.	Spring	10	12	5	0	5	2	1	2	4	9	20	19	22	12	22	12	2	N. 85 23 W.	.47	N. 87 W.	.12	50
	Autumn	34	18	39	7	13	1	17	3	41	15	45	40	124	44	39	11	11	N. 80 44 W.	.41	N. 62½ E.	.04	168
	Winter	10	7	41	13	24	5	11	6	35	15	31	15	37	18	9	6	12	S. 43 35 W.	.10½	S. 69 E.	.30	99
69. Long. 125° to 135° E.	Summer	17	10	5	1	1	1	4	1	6	12	17	17	26	14	12	6	0	N. 81 53 W.	.46	N. 73 W.	.12	50
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 56 W.	.34½	....	...	624
70. Long. 130° to 135° E.	Spring	19	6	4	5	4	1	3	1	4	4	15	16	21	9	7	10	11	N. 68 16 W.	.37	N. 1 E.	.19	47
	Autumn	20	13	24	10	21	12	15	8	16	3	49	11	83	7	34	16	3	N. 80 58 W.	.26	S. 73 E.	.16	115
	Winter	23	6	15	3	18	3	18	10	15	17	42	21	51	15	19	4	5	S. 71 1 W.	.30	S. 25½ E.	.25½	95
71. Long. 135° to 145° E.	Spring	21	7	14	8	24	6	9	1	5	94	35	14	28	20	25	14	12	N. 69 29 W.	.23	N. 14½ W.	.15	86
	Summer	11	10	3	9	11	2	29	2	17	10	16	13	25	19	24	21	13	S. 18 45 W.	.20	N. 31 W.	.04	79
	Autumn	29	19	20	10	31	17	18	8	37	14	48	23	78	31	26	20	13	S. 80 49 W.	.23	N. 56 W.	.05½	148
	Winter	25	1	12	18	51	22	55	29	49	25	74	42	40	16	28	6	18	S. 12 9 W.	.28½	S. 29 E.	.24	171
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 68 44 W.	.19	....	...	484

[1] Computed from the resultants for the seasons.

(Nos. 72 to 87.) **Victoria, Australia.**

Observed at the following places, viz.:—

Arrarat, at the Survey Office, 1072 feet above sea-level, by Messrs. G. Langford and John Pegg, during the year 1859.

Ballaarat, at Survey Office, 1437 feet above sea-level, by Messrs. J. H. Taylor and Thos. Adair, during the years 1859 to 1862, inclusive.

Beechworth, at Survey Office, 1783 feet above sea-level, by H. Wackerow, during the first five months of 1859.

Camperdown, by R. D. Scott. during the years 1859 to 1862 inclusive, except March, 1861.

Cape Otway, at Telegraph Station, by Joseph W. Payter, during the year 1862.

Castlemaine, 1000 feet above sea-level, by Messrs. Adair and Couchman, from January, 1859, to February, 1861, inclusive.

(Nos. 72 to 87.) **Victoria, Australia.**—*Continued.*

Gabo Island, at the Light House, by G. Tapp, from January, 1860, to November, 1861, inclusive, except July, 1861.

Geelong, at Survey Office, by Messrs. Skene and Mason, from January, 1859, to May, 1860, inclusive.

Heathcote, at Survey Office, by Messrs. Chauncey, Mason and Innes, from January, 1859, to April, 1861, and from November, 1861, to December, 1862, both inclusive.

Melbourne, at the Observatory, by its officers, during the years 1859, 1860, 1861 and 1862.

Port Albert, by J. Perris, during the years 1859 and 1860, except May and June, 1859.

Portland, by Messrs. Fawthrop and Burkitt, during the years 1859 to 1862, inclusive, except December, 1859.

Sandhurst, at Survey Office, by Messrs. Lavitt and Taylor, during an aggregate period of 29 months in the years 1859 to 1862 inclusive.

Yan Yean, during the month of January, 1859.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
72. Sandhurst.	Spring	25.0	15.1	7.0	19.6	45.0	35.0	11.0	19.7	...	S. 28° 5′ W.	.15½	N. 54° E.	.05½	276
	Summer	35.3	21.6	17.0	17.3	46.6	41.5	18.6	36.1	...	S. 67 22 W.	.13½	N. 3 W.	.12	276
	Autumn	28.6	12.7	8.5	16.4	43.6	40.0	14.7	28.7	...	S. 53 11 W.	.22	N. 58 W.	.07	212
	Winter	21.7	7.4	3.7	21.0	51.4	25.0	9.0	16.4	...	S. 14 39 W.	.37	S. 6½ E.	.19	180
	The year	110.6	56.8	36.2	74.3	186.6	141.5	53.3	100.9	...	S. 35 54 W.	.19			
73. Portland.	Spring	31.4	20.3	38.0	47.5	32.0	37.8	78.0	70.8	..	S. 88 25 W.	.19½	N. 63 W.	.10½	368
	Summer	70.5	31.3	29.5	28.7	25.8	39.3	60.0	81.2	...	N. 43 54 W.	.29	N. 15½ W.	.41	368
	Autumn	31.1	15.5	42.7	45.8	29.5	50.5	84.4	56.2	...	S. 77 56 W.	.21	S. 82 W.	.11	364
	Winter	9.3	4.8	65.7	76.7	39.8	49.3	49.7	30.5	...	S. 10 18 E.	.29½	S. 36 E.	.53	330
	The year	142.3	71.9	175.9	198.7	127.1	176.9	272.1	238.7	...	S. 67 20 W.	.13½			
74. Ballaarat.	January	213	40	63	293	270	150	57	110						
	February	140	10	53	373	287	157	37	133						
	March	140	63	40	330	213	193	53	157						
	April	290	30	13	153	243	210	53	187						
	May	353	27	23	63	107	240	67	310						
	June	443	37	17	140	137	197	57	253						
	July	363	63	20	150	187	203	83	130						
	August	430	90	0	97	160	220	37	137						
	September	397	57	13	63	150	240	90	200						
	October	323	12	30	167	160	198	133	177						
	November	203	52	65	217	207	310	70	97						
	December	177	37	37	240	223	260	63	153						
	Spring	783	120	76	546	563	643	173	654	...	S. 82 18 W.	.15½	N. 67½ W.	.03½	
	Summer	1236	190	37	387	484	620	177	520	...	N. 44 48 W.	.21	N. 9½ W.	.18	
	Autumn	923	121	108	447	517	748	293	474	...	S. 88 23 W.	.18	N. 65 W.	.07	
	Winter	530	87	153	910	780	567	157	396	...	S. 1 12 E.	.26½	S. 28 E.	.26	
	The year	3472	518	347	2290	2344	2578	800	2044	...	S. 73 51 W.	.12½			
75. Geelong.	Spring	3	9	2	17	11	30	16	10	...	S. 40 41 W.	.37½	S. 39 E.	.13	123
	Summer	3	3	0	3	2	9	48	14	...	N. 85 41 W.	.73½	N. 60½ W.	.46	92
	Autumn	1	6	1	9	9	17	24	8	...	S. 61 16 W.	.45	....	...	91
	Winter	2	10	16	31	15	17	19	11	...	S 10 55 E.	.27	S. 77½ E.	.39	150
	The year[1]	...	...	...	...	...	...	...	...	...	S. 61 43 W.	.37½			
76. Cape Otway.	Spring	10.6	8.9	17.3	13.3	12.0	6.6	9.9	11.0	...	S. 83 5 E.	.13	N. 9½ E.	.01	92
	Summer	8.8	21.0	9.8	13.2	6.6	7.8	9.2	16.5	...	N. 28 42 E.	.17	N. 24½ W.	.17½	92
	Autumn	6.0	10.1	25.9	16.0	8.1	3.6	8.7	15.5	...	N. 84 29 E.	.24	N. 69 E.	.12	91
	Winter	2.7	5.6	17.0	19.8	10.1	12.7	15.1	6.9	...	S. 15 34 E.	.25	S. 16 W.	.23	90
	The year	28.1	45.6	70.0	62.3	36.8	30.7	42.	49.9	...	S. 81 40 E.	.13			
77. S. W. Victoria.[2]	Spring	145.6	57.2	70.1	136.7	146.4	146.7	116.9	167.9	...	S. 72 22 W.	.14	N. 61 W.	.03	
	Summer	238.5	92.2	60.0	98.2	127.6	151.5	110.3	187.2	...	N. 49 37 W.	.20	N. 26 W.	.19	
	Autumn	158.1	50.6	88.0	123.8	132.8	170.6	139.5	148.6	...	S. 74 44 W.	.16	N. 72 W.	.05	
	Winter	86.9	27.5	103.3	211.6	180.8	145.4	90.4	94.5	...	S. 2 46 E.	.28	S. 28½ E.	.27	
	The year	629.1	227.5	321.4	570.3	587.6	614.2	457.1	598.2	...	S. 63 34 W.	.12			

[1] Computed from the resultants for the seasons.
[2] Five preceding stations combined.

(Nos. 78 to 83.) **Victoria.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	Between N. E. & N.	N. E.	Between E. & N. E.	East.	Between E. & S. E.	S. E.	Between S. & S. E.	South.	Between S. & S. W.	S. W.	Between W. & S. W.	West.	Between W. & N. W.	N. W.	Between N. & N. W.	Calm or variable.
78. Melbourne.	January	148	156	181	119	74	133	171	346	346	392	176	218	176	106	76	96	51
	February	85	118	147	85	43	211	240	292	359	329	167	194	126	74	60	90	89
	March	123	168	227	152	82	108	174	254	333	363	153	202	182	117	101	127	102
	April	213	323	330	103	44	60	108	167	191	192	111	187	238	154	113	186	158
	May	355	487	274	75	22	18	25	42	50	72	55	221	302	289	240	313	133
	June	478	485	392	138	37	26	60	97	92	77	51	135	169	121	124	282	113
	July	452	504	331	78	47	39	84	45	62	98	60	148	251	178	166	241	191
	August	373	427	388	114	27	37	61	77	102	148	156	203	263	157	123	156	160
	September	310	361	370	148	46	59	74	92	155	177	91	173	223	160	173	195	64
	October	238	261	230	113	52	61	109	169	224	403	176	170	205	115	149	206	103
	November	175	167	158	94	70	120	137	199	278	435	217	189	215	117	113	92	90
	December	178	160	151	111	80	138	163	270	368	425	165	177	167	89	79	118	108
	Spring	691	978	831	330	148	186	307	463	574	627	319	610	722	560	454	426	393
	Summer	1303	1416	1111	330	111	102	205	219	256	323	267	486	683	456	413	679	464
	Autumn	723	789	758	355	168	240	320	460	657	1015	484	532	643	392	435	493	257
	Winter	411	434	479	315	197	482	574	908	1073	1146	508	589	469	269	215	304	248
	The year	3128	3617	3179	1330	624	1010	1406	2050	2560	3111	1578	2217	2517	1677	1517	1902	1362
79. Yan-yean.	January	3	...	0	...	0	...	1	...	7	...	7	...	2	...	4	...	24
80. Heathcote.	Spring	28.7	...	21.5	...	23.0	...	36.8	...	67.0	...	19.2	...	53 8	...	39.3	...	...
	Summer	41.0	...	28.5	...	26.0	...	28.5	...	43.0	...	16.0	...	35.5	...	29.5	...	...
	Autumn	30.0	...	28.5	...	24.5	...	33.0	...	65.5	...	13.0	...	46.0	...	29.5	...	...
	Winter	20.5	...	25.3	...	19.7	...	42.2	...	10.80	...	22.0	...	38.8	...	24.3	...	...
	The year[1]	120.2	...	103.8	...	93.2	...	140.5	...	186.3	...	70.2	...	174.1	...	122.6	...	...
81. Castlemaine.	Spring	26	...	6	...	15	...	4	...	27	...	17	...	57	...	8	...	...
	Summer	25	...	9	...	14	...	7	...	33	...	11	...	51	...	11	...	...
	Autumn	26	...	8	...	12	...	4	...	30	...	14	...	45	...	15	...	...
	Winter	24	...	15	...	24	...	41	...	36	...	19	...	31	...	11	...	...
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
82. Beechworth.	Spring	14	...	8	...	5	...	5	...	10	...	12	...	12	...	8	...	...
	Jan. & Feb.	4	...	3	...	9	...	6	...	9	...	9	...	8	...	4	...	...
83. Camperdown.	Spring	15.3	...	17.3	...	29.3	...	26.0	...	35.3	...	62.3	...	67.6	...	30.7	...	...
	Summer	16.7	...	26.0	...	45.3	...	17.0	...	12.7	...	37.7	...	84.3	...	41.0	...	...
	Autumn	19.6	...	17.7	...	32.3	...	15.7	...	21.0	...	47.7	...	61.0	...	24.3	...	...
	Winter	15.0	...	18.0	...	43.9	...	28.4	...	38.3	...	38.0	...	50.4	...	14.7	...	...
	The year	66.6	...	79	...	150.8	...	87.1	...	107.3	...	185.7	...	263.3	...	110.7	...	...

Place of observation.	Time of the year.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
78. Melbourne.	Spring	N. 40° 19′ W.	.14	N. 32½° W.	.06	
	Summer	N. 4 32 W.	.37½	N. 3 E.	.32	
	Autumn	N. 78 41 W.	.09	S. 34½ W.	.05	
	Winter	S. 3 21 W.	.27	S. 8 E.	.33	
	The year	N. 45 0 W.	.08			
79. Yan-yean.	January	S. 53 2 W.	.24			
80. Heathcote.	Spring	S. 41 33 W.	.16	S. 42 W.	.09½	337
	Summer	N. 10 47 W.	.03	N. 24 E.	.08	276
	Autumn	S. 16 38 W.	.10½	S. 11 E.	.05	303
	Winter	S. 81 25 W.	.02	N. 24 E.	.05	361
	The year	S. 39 1 W.	.07			
81. Castlemaine.	Spring	S. 83 33 W.	.33	N. 77½ W.	.13	184
	Summer	S. 80 55 W.	.25½	N. 64 W.	.05½	184
	Autumn	S. 89 25 W.	.29	N. 55 W.	.11	182
	Winter	S. 17 32 E.	.19	S. 66 E.	.28	240
	The year[1]	S. 72 25 W.	.21½			
82. Beechworth.	Spring	N. 74 36 W.	.17	....	...	92
	Jan. & Feb.	S. 9 45 W.	.21	....	...	59
83. Camperdown.	Spring	S. 56 35 W.	.31	S. 41½ E.	.10	337
	Summer	N. 78 49 W.	.24	N. 16 W.	.15	368
	Autumn	S. 73 37 W.	.24½	N. 58 W.	.05	364
	Winter	S. 13 5 W.	.19½	N. 58 W.	.18	361
	The year	S. 64 5 W.	.21½			

[1] Computed from the resultants for the seasons.

(Nos. 84 to 87.) **Victoria.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
84. Port Albert.	Spring	2½	3	18	6	5	7	44	4½	...	S. 77° 2′ W.	.32	N. 88½° W.	.20	123
	Summer	7	8	37	7	6	10	47	18	...	N. 68 18 W.	.14	N. 8½ W.	.13	184
	Autumn	4½	3	50	8	11	27	55	2½	...	S. 33 27 W.	.20½	S. 2 W.	.09	182
	Winter	5	2	33	15	7	6	25	6	...	S. 45 52 E.	.16	S. 81 E.	.23	119
	The year[1]	...	...	...	...	...	...	...	...	...	S. 55 30 W.	.13			
85. Arrarat.	Spring	47	0	12	21	23	33	15	29	...	N. 78 48 W.	.19			
	Summer	53	4	5	12	21	36	19	40	...	N. 62 15 W.	.33			
	Autumn	51	2	9	24	35	18	21	20	...	N. 84 49 W.	.12			
	Winter	16	0	1	15	15	10	3	0	...	S. 5 17 E.?	.28			
	The year[1]	...	...	...	...	...	...	...	...	...	S. 82 5 W.	.14			
86 & 87. Gabo Island.	Spring	214	256	51	44	64	230	375	201	...	N. 56 9 W.	.35	....	...	184
	Summer	217	117	79	28	113	276	435	136	...	N. 82 54 W.	.39	....	...	153
	Autumn	423	229	71	43	71	400	357	92	...	N. 58 54 W.	.31	....	...	182
	Winter	182	250	139	93	130	236	240	36	...	N. 66 58 W.	.04	....	...	181
	The year[1]	...	...	...	...	...	...	...	...	...	N. 66 51 W.	.26½			

[1] Computed from the resultants for the seasons.

(Nos. 88 to 90(*a*).) **Northern New Zealand.**

Observed at the following places, viz.:—

Aukland, at station of Royal Engineers, during the years of 1853 to 1859 inclusive, 1866 and 1867.

Bay of Islands, under direction of Commodore Wilkes, for seven days, in the spring of 1840.

Mongonui, 1857 to 1869(?), probably by government officers.

Russel, by L. Williams, from April 24th, 1843, to February 10th, 1844.

Taranaki, 1857 to 1869(?), probably by officers of the government.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
88. Russel.	Spring	8	0	6	4	6	2	6	4	5	2	15	2	6	0	9	0	0	S. 23°50′W.??	.11	S. 73½° E.	.05	37
	Summer	10	6	10	4	5	0	7	0	8	6	45	2	24	5	8	0	0	S. 68 43 W.?	.36	S. 79 W.	.24	71
	Autumn	4	0	12	0	14	0	16	0	6	0	34	0	44	0	20	0	2	S. 72 56 W.?	.33	S. 87 W.	.22	76
	Winter	6	2	40	0	26	0	24	0	8	2	24	0	4	0	8	0	0	S. 87 26 E.?	.31	N. 80 E.	.41	72
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 48 55 W.?	.13	....	...	256
89. Bay of Islands.	Spring	32	0	24	16	24	8	88	16	60	8	81	8	30	0	35	0	34	....	...	....	...	
90. Aukland.	January	2	...	7	...	2	...	2	...	4	...	9	...	3	...	2							
	February	3	...	6	...	1	...	2	...	3	...	8	...	2	...	3							
	March	3	...	6	...	3	...	4	...	3	...	7	...	2	...	3							
	April	2	...	4	...	2	...	4	...	3	...	10	...	2	...	3							
	May	1	...	3	...	1	...	3	...	4	...	10	...	4	...	5							
	June	1	...	4	...	3	...	4	...	4	...	7	...	4	...	3							
	July	2	...	5	...	3	...	4	...	5	...	7	...	2	...	3							
	August	1	...	5	...	3	...	4	...	3	...	9	...	2	...	4							
	September	2	...	6	...	2	...	2	...	2	...	5	...	4	...	7							
	October	2	...	4	...	1	...	1	...	3	...	10	...	6	...	4							
	November	2	...	3	...	2	...	0	...	3	...	10	...	6	...	4							
	December	5	...	6	...	1	...	1	...	4	...	7	...	4	...	3							
	Spring	6	...	13	...	6	...	11	...	10	...	27	...	8	...	11	...	...	S. 40 34 W.	.20			
	Summer	4	...	14	...	9	...	12	...	12	...	23	...	8	...	10	...	...	S. 14 4 W.	.19			
	Autumn	6	...	13	...	5	...	3	...	8	...	25	...	16	...	15	...	...	S. 83 40 W.	.20			
	Winter	10	...	19	...	4	...	5	...	11	...	24	...	9	...	8	...	...	S. 77 13 W.	.12			
	The year	26	...	59	...	24	...	31	...	41	...	99	...	41	...	44	...	...	S. 52 32 W.	.16			
90(*a*). North Island.[1]	Spring	8	...	11	...	5	...	6	...	5	...	21	...	29	...	15	...	...	N. 86 30 W.	.37½	N. 58½ W.	.16½	
	Summer	13	...	16	...	7	...	7	...	5	...	18	...	21	...	13	...	...	N. 61 11 W.	.22	N. 12½ E.	.17	
	Autumn	7	...	10	...	6	...	16	...	8	...	25	...	18	...	10	...	...	S. 49 18 W.	.24	S. 25 E.	.11	
	Winter	5	...	9	...	7	...	17	...	9	...	26	...	16	...	11	...	...	S. 39 38 W.	.26	S. 24 E.	.16	
	The year	33	...	46	...	25	...	46	...	27	...	90	...	84	...	49	...	...	S. 76 1 W.	.24			

[1] Observed at Mongonui and Taranaki. [2] Computed from the resultants for the seasons.

(Nos. 91 to 100.) **Pacific Ocean,** west of longitude 180°.

From observations for an aggregate period of nearly 3 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
91. Long. 145° to 155° E.	Autumn	15	22	17	13	11	0	1	11	4	5	9	28	17	13	3	2	4	N. 35° 17′ W.	.16½	N. 62½° W.	.11	62
	Winter	10	9	19	16	38	2	13	6	5	4	26	17	8	6	9	0	7	S. 84 44 E.	.14½	S. 53 E.	.19	65
92. Long. 145° to 160° E.	Spring	27	8	10	4	11	9	16	4	17	6	8	3	2	2	7	5	3	N. 77 23 E.?	.17	S. 70 E.	.18½	41
	Summer	15	8	4	0	7	0	7	2	8	8	15	2	13	12	12	7	1	N. 70 49 W.	.28	S. 88 W.	.26	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 4 12 W.	.10	....	...	442
93. Long. 155° to 160° E.	Autumn	35	3	6	1	11	1	4	2	10	5	15	0	11	5	14	3	3	N. 33 7 W.	.24½	N. 50 W.	.16½	43
	Winter	143	5	59	16	63	5	59	28	56	8	26	1	14	1	28	30	26	N. 49 31 E.	.33½	N. 65 E.	.29	190
94. Long. 160° to 165° E.	Autumn	20	8	10	4	5	0	2	3	15	6	19	5	2	3	22	4	6	N. 55 35 W.	.21½	N. 43 W.	.13	45
	Winter	40	7	6	3	20	2	34	4	31	9	14	25	11	6	24	23	11	N. 76 48 W.	.07½	S. 47 E.	.06	90
95. Long. 160° to 170° E.	Spring	17	0	3	6	4	3	16	3	10	2	24	11	2	2	21	5	2	S. 72 57 W.	.17	S. 22 W.	.11	44
96. Long. 165° to 170° E.	Autumn	13	14	10	1	7	0	2	1	23	1	18	7	27	4	7	1	9	S. 88 30 W.	.23	S. 61 W.	.13	49
	Winter	24	34	31	33	22	12	21	16	43	11	51	6	23	6	21	29	8	N. 66 26 E.	.08	S. 82 E.	.19	134
97. Long. 160° to 180° E.	Summer	16	8	11	6	4	1	8	12	11	0	16	7	13	2	19	6	12	N. 56 35 W.	.13½	N. 6 E.	.02	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 7 W.	.13	....	...	629
98. Long. 170° to 175° E.	Winter	54	4	13	24	43	9	18	3	39	6	27	16	39	8	39	13	12	N. 59 37 W.	.05½	S. 65 E.	.07½	123
99. Long. 170° E. to 180°.	Spring	30	22	32	9	17	20	37	10	33	6	29	24	50	20	27	3	25	S. 79 29 W.	.07	S. 34 E.	.08	33
	Autumn	3	1	1	0	0	0	0	0	0	0	1	0	2	0	0	0	0	N. 22 27 W.???	.53	N. 11½ W.	.04	8
100. Long. 175° E. to 180°.	Winter	11	5	6	10	17	3	9	6	7	4	15	5	18	5	16	9	10	N. 49 5 W.	.09	East.	.05	52

[1] Computed from the resultants for the seasons.

ZONE No. 27.

Latitude 40° to 45° South.

The data for the study of the winds of this zone consist of observations made at 10 stations on land, for an aggregate period of 37 years 6 months; at sea for over 52 years. The distribution is as follows:—

Where observed.	No. Stations.	Aggregate length of time.
Pacific Ocean,	....	over 21 years 6 months.
South America,	3	5 years 9 months.
Atlantic Ocean,	....	over 8 years.
Indian Ocean,	....	over 22 years 6 months.
Van Dieman's Land,	3	20 years 9 months.
New Zealand,	4	11 years.

(Nos. 1 to 17.) **Pacific Ocean,** east of longitude 180°.

From observations for an aggregate period of over 17½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
1. Long. 175° to 180° W.	Spring	35	1	11	10	14	0	13	6	23	14	35	8	32	13	23	6	21	S. 80° 54′ W.	.21½	S. 45° W.	.11	90
	Autumn	23	0	32	4	18	3	6	6	3	1	7	1	9	4	5	5	7	N. 38 36 E.?	.35	N. 57 E.	.04	45
	Winter	62	19	42	10	12	25	28	11	55	62	119	25	41	15	76	33	37	N. 73 53 W.	.22½	N. 76 W.	.08	224
2. Long. 170° to 175° W.	Winter	39	8	26	3	24	9	7	17	33	14	63	15	47	21	51	17	15	N. 87 4 W.	.26	S. 78 W.	.12	137
3. Long. 165° to 180° W.	Summer	2	5	6	6	1	2	3	6	14	3	3	2	6	8	8	0	1	S. 39 27 W.?	.10	N. 79½ E.	.20	28
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 8 W.	.14½	....	...	671
4. Long. 165° to 175° W.	Spring	9	2	7	1	9	9	5	3	8	3	7	12	8	6	18	6	3	N. 68 4 W.	.15½	N. 17 W.	.01	39
	Autumn	16	2	11	2	3	0	14	2	2	3	8	7	13	10	22	19	3	N. 44 0 W.	.36	N. 27 W.	.14	46
5. Long. 165° to 170° W.	Winter	11	1	9	2	0	10	8	4	9	10	26	24	21	10	35	2	2	S. 83 31 W.	.42	S. 72½ W.	.16	62
6. Long. 160° to 165° W.	Autumn	20	56	17	37	8	40	14	13	15	44	24	66	28	55	42	73	16	N. 52 0 W.	.23	N. 56½ E.	.06½	189
	Winter	29	44	20	25	4	14	4	16	11	58	20	92	45	77	30	84	17	N. 68 2 W.	.39	N. 73 W.	.13	197
7. Long. 150° to 165° W.	Spring	15	13	12	16	5	18	7	8	6	31	15	22	9	23	24	16	5	N. 76 19 W.	.16	S. 50 E.	.10	82
8. Long. 155° to 160° W.	Autumn	18	30	6	15	3	19	14	17	15	36	33	60	44	123	54	76	10	N. 71 24 W.	.46	N. 79 W.	.20	191
	Winter	39	98	29	38	34	31	14	34	18	45	29	132	84	99	33	112	20	N. 56 53 W.	.31	N. 21 W.	.06½	290
9. Long. 150° to 155° W.	Autumn	11	16	1	4	2	8	5	4	0	8	9	20	31	21	18	8	10	N. 70 31 W.	.42	N. 78 W.	.16	59
	Winter	45	63	13	8	5	41	22	26	6	32	22	76	62	87	46	111	23	N. 54 9 W.	.37	N. 30 W.	.12	229
10. Long. 120° to 165° W.	Summer	0	22	8	18	0	5	2	21	9	18	7	26	30	21	12	11	4	S. 86 5 W.	.25	S. 6 W.	.12	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 65 46 W.	.26	....	...	1693
11. Long. 120° to 150° W.	Spring	12	18	7	19	13	12	5	15	0	7	6	17	16	22	7	19	10	N. 14 27 W.	.16	N. 75½ E.	.16	68
	Autumn	11	43	17	34	13	13	1	7	4	10	10	33	37	70	23	40	8	N. 37 15 W.	.37	N. 4 E.	.15	125
	Winter	15	32	13	41	18	26	22	27	3	51	14	68	23	71	55	67	20	N. 62 33 W.	.23	S. 89½ E.	.03	192
12. Long. 100° to 120° W.	Spring	18	16	6	3	5	3	8	10	19	11	24	11	18	16	31	19	3	N. 74 34 W.	.30	N. 43 E.	.05	74
	Summer	10	2	6	1	1	0	9	3	10	0	0	0	12	5	2	2	0	N. 60 4 W.?	.08	S. 89 E.	.26	21
	Autumn	36	6	8	5	1	5	3	14	24	12	52	23	41	41	34	13	1	N. 88 43 W.	.45	S. 76 W.	.13	106
	Winter	22	10	11	6	4	3	4	6	7	9	50	23	70	19	42	6	11	N. 84 23 W.	.50	N. 87 W.	.17	101
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 13 W.	.33	....	...	302
13. Long. 85° to 100° W.	Spring	29	28	18	4	14	7	10	9	9	10	44	16	21	17	29	23	14	N. 52 43 W.	.24	N. 64 E.	.18	101
	Summer	7	7	10	7	1	11	7	4	10	7	4	26	13	16	15	8	9	N. 86 5 W.	.22	S. 69 E.	.14	54
	Autumn	11	9	2	5	5	10	4	2	9	21	23	39	39	42	28	11	8	S. 85 10 W.	.50	S. 53 W.	.18	89
	Winter	12	21	0	5	5	1	8	3	14	7	26	14	44	55	47	10	12	N. 72 41 W.	.52	N. 59½ W.	.16½	95
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 8 W.	.36	....	...	339
14. Long. 80° to 85° W.	Spring	33	20	17	13	10	18	3	31	22	33	46	54	55	57	39	62	15	N. 77 42 W.	.38	N. 29 E.	.08	173
	Summer	11	4	0	7	1	2	3	8	5	9	13	14	19	13	10	18	6	N. 81 37 W.?	.39	N. 29 E.	.05	48
	Autumn	14	28	12	15	5	13	27	28	15	53	33	87	38	44	28	44	8	S. 76 12 W.	.33	S. 46 E.	.13	164
	Winter	37	37	3	2	2	3	7	21	14	84	74	164	94	134	47	61	43	S. 87 55 W.	.57	S. 80 W.	.16	276
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 88 45 W.	.41	....	...	661
15. Long. 75° to 80° W.	Summer	12	22	1	9	0	12	7	13	10	25	22	52	46	47	49	44	7	N. 77 16 W.	.48	N. 10 E.	.06	126
	Autumn	198	287	19	64	21	59	21	108	143	502	237	495	302	643	309	550	133	N. 78 29 W.	.46	N. 31 E.	.06	1364
	Winter	81	152	2	9	0	6	6	83	143	576	182	455	212	376	158	283	84	S. 77 33 W.	.52	S. 10 W.	.15	936
16. Long. 73° to 80° W.	Spring	16	24	7	6	1	11	5	6	26	31	36	57	58	94	42	49	15	N. 80 32 W.	.52	N. 35 W.	.05	161
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 85 7 W.	.48½	....	...	2730
17. Long. 73° to 75° W.	Autumn	0	15	0	1	1	2	0	0	0	34	6	21	14	17	11	23	11	N. 85 51 W.	.47	S. 58 E.	.01	52
	Winter	0	9	2	0	0	4	0	0	10	74	9	43	9	27	14	61	10	S. 82 58 W.	.49	S. 3 W.	.10	91

[1] Computed from the resultants for the seasons.

(Nos. 17(*a*) to 17(*c*).) **Southern Chili.**

Observed as follows :—

Place of observation.	By whom observed.	Aggregate length of time. yrs.	mos.	Date.
Gulf of Ancud,	Dublé Almeida,	4	0	1863, 1866, 1867, 1868.
Melinka,	F. Westhoff, reporter,	0	9	October and November, 1865; December, 1865–6; January, 1866–7; February, 1866–7; March, 1867.
Puerto Montt,	Dr. Fied Geisse,	6	0	1859 to 1864 inclusive.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
17(*a*). Puerto Montt.	Spring	50	2	0	11	15	4	3	14	...	N. 10° 13′ W.	.36½	N. 46° W.	.08
	Summer	67	2	1	5	8	3	3	12	...	N. 6 51 W.	.63	N. 10½ W.	.33
	Autumn	42	2	1	15	22	3	1	15	...	N. 2 45 W.	.19	South.	.10½
	Winter	30	10	1	18	39	1	1	10	...	N. 81 57 E.	.12	S. 24 E.	.31
	The year	189	16	3	49	74	11	8	51	...	N. 1 22 W.	.30		
17(*b*). Gulf of Ancud.	January	4	1	0	0	2	13	3	7	1				
	February	3	0	0	0	7	9	4	5	1				
	March	6	0	0	0	4	6	10	3	2				
	April	6	2	2	1	2	4	4	6	3				
	May	11	5	3	2	1	0	3	6	0				
	June	5	2	1	1	2	2	3	12	2				
	July	5	2	0	4	2	4	3	9	2				
	August	6	5	0	1	1	1	5	9	3				
	September	4	1	0	4	6	3	4	3	5				
	October	5	1	0	1	2	9	8	2	3				
	November	6	0	0	0	1	7	4	6	6				
	December	6	1	0	0	0	8	2	9	5				
	Spring	23	7	5	3	7	10	17	15	5	N. 45 25 W.	.34	N. 42 E.	.14
	Summer	16	9	1	6	5	7	11	30	7	N. 41 21 W.	.42	N. 28½ E.	.20
	Autumn	15	2	0	5	9	19	16	11	14	S. 86 50 W.	.35½	S. 5 W.	.15
	Winter	13	2	0	0	9	30	9	21	7	S. 88 47 W.	.48	S. 44½ W.	.20
	The year	67	20	6	14	30	66	53	77	33	N. 68 26 W.	.36		
17(*c*). Melinka.	Winter	14	2	2	1	14	19	15	11	22	S. 81 14 W.	.05		
	October, November, March	10	2	0	0	6	14	14	40	14	N. 64 54 W.	.56		

(Nos. 18 to 33.) **Atlantic Ocean.**

From observations for an aggregate period of over 8 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
18. Long. 60° to 65° W.	Spring	26	47	8	15	3	9	0	19	15	59	34	28	16	25	19	55	5	N. 73° 34′ W.	.27	S. 22° W.	.04	128
19. Long. 55° to 65° W.	Spring	74	114	14	44	6	22	9	56	72	124	69	95	36	70	64	137	27	N. 74 25 W.	.25	S. ½ E.	.06	344
	Summer	16	17	1	16	1	3	0	6	2	19	4	37	14	6	17	16	3	N. 65 40 W.	.33	N. 71 W.	.05	59
	Autumn	17	34	15	16	4	11	8	17	8	27	24	31	18	31	17	50	12	N. 55 13 W.	.25	N. 57 E.	.04½	113
	Winter	30	48	9	34	7	11	1	17	10	42	41	57	31	33	9	70	26	N. 62 57 W.	.26	N. 86½ E.	.01	159
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 20 W.	.27	....	...	675
20. Long. 55° to 60° W.	Spring	48	67	6	29	3	13	9	37	57	64	35	67	20	45	45	82	22	N. 75 25 W.	.23	S. 18 E.	.05	216
21. Long. 50° to 55° W.	Spring	12	13	1	12	1	5	3	6	3	18	27	47	26	39	37	38	16	N. 75 16 W.	.50	N. 76 W.	.19	101
	Summer	3	9	0	6	4	5	1	10	7	10	3	15	7	11	9	10	5	S. 84 13 W.?	.22	S. 37 E.	.13	38
	Autumn	13	23	8	28	20	16	8	26	9	12	22	53	28	26	32	32	15	N. 72 3 W.	.19	S. 78 E.	.11	124
	Winter	17	64	8	34	10	9	8	19	4	40	33	81	45	73	28	84	18	N. 62 2 W.	.37	N. 16½ W.	.10	192
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 28 W.	.31	....	...	455

[1] Computed from the resultants for the seasons.

(Nos. 22 to 33.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative prevalence of winds from the different points of the compass.																					
22. Long. 45° to 50° W.	Spring	21	9	15	1	10	4	6	5	24	26	34	4	33	19	20	18	21	S. 85° 39′ W.	.28	S. 29° E.	.06	90
	Summer	10	3	2	1	2	0	9	5	8	2	35	6	24	10	33	8	3	N. 89 2 W.	.48	S. 83 W.	.17	54
	Autumn	42	10	27	13	14	6	6	9	26	22	30	7	20	16	34	8	8	N. 52 14 W.	.15	N. 72 E.	.20	99
	Winter	65	19	28	5	28	1	33	10	54	45	116	32	63	41	131	41	14	N. 83 43 W.	.35	N. 78½ W.	.04	242
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 84 28 W.	.31	....	...	485
23. Long. 40° to 45° W.	Winter	87	22	39	4	32	16	28	15	71	54	154	49	49	128	57	146	75	N. 85 7 W.	.38	N. 66 E.	.12	334
24. Long. 35° to 45° W.	Spring	16	3	7	2	1	2	5	2	18	10	39	5	27	21	38	17	6	N. 83 11 W.	.47	N. 56 W.	.10½	73
	Summer	5	2	2	3	0	3	7	5	15	8	14	4	16	11	9	12	3	S. 71 3 W.?	.35	S. 29½ E.	.12	40
	Autumn	23	5	17	0	3	6	11	5	17	28	30	26	16	24	29	33	5	N. 88 49 W.	.34	N. 68 E.	.05	89
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 53 W.	.39	....	...	666
25. Long. 35° to 40° W.	Winter	29	6	4	12	9	1	6	13	20	27	59	33	56	33	34	37	11	N. 88 58 W.	.44	N. 71½ W.	.05	130
26. Long. 10° to 35° W.	Winter	20	0	5	4	1	0	9	0	4	6	10	6	19	30	37	15	8	N. 55 56 W.	.54	N. 15 W.	.14½	59
27. Long. 5° to 10° W.	Winter	1	2	0	0	2	0	5	4	0	24	11	24	18	44	17	25	0	N. 85 44 W.	.63	S. 62½ W.	.24	59
28. Long. 0° to 5° W.	Winter	4	25	2	0	0	3	0	28	4	53	8	83	31	84	38	83	9	N. 79 11 W.	.55	S. 67 W.	.14	152
29. Long. 35° W. to 20° E.	Spring	10	5	0	5	1	5	3	3	0	5	6	8	8	15	4	20	3	N. 50 44 W.?	.39	N. 50½ E.	.14	34
	Summer	6	9	5	1	1	1	3	4	0	0	2	25	5	13	0	21	0	N. 57 48 W.?	.54	N. 19½ W.	.14	32
	Autumn	4	1	0	0	0	3	3	2	1	0	17	3	7	0	4	10	0	S. 87 42 W.?	.47	S. 18 W.	.18	21
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 68 51 W.	.44	....	...	657
30. Long. 0° to 5° E.	Winter	13	24	0	1	0	2	3	16	6	22	11	63	15	55	18	55	4	N. 73 58 W.	.52	S. 80 W.	.10	103
31. Long. 5° to 10° E.	Winter	18	13	1	1	3	6	0	18	3	60	10	37	27	59	28	74	7	N. 75 49 W.	.49	S. 60 W.	.07	122
32. Long. 10° to 15° E.	Winter	18	8	0	5	0	0	0	4	3	20	21	10	17	10	6	28	1	N. 80 45 W.?	.45	S. 21 W.	.10	48
33. Long. 15° to 20° E.	Winter	4	6	0	4	0	7	0	0	3	4	5	14	6	14	10	11	0	N. 66 41 W.?	.44	N. 23½ E.	.02	29

[1] Computed from the resultants for the seasons.

(Nos. 34 to 65.) **Indian Ocean.**

From observations for an aggregate period of over 22½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative prevalence of winds from the different points of the compass.																					
34. Long. 20° to 25° E.	Winter	14	16	8	16	3	5	4	6	1	19	8	33	13	30	10	15	2	N. 65° 51′ W.	.31	S. 64° W.	.17	68
35. Long. 25° to 30° E.	Winter	12	20	4	8	0	7	4	11	2	23	6	39	20	39	7	19	4	N. 79 46 W.	.39	S. 62½ W.	.29	75
36. Long. 20° to 35° E.	Spring	10	27	12	28	12	12	5	12	8	25	6	32	15	22	3	12	5	N. 31 55 W.	.07	S. 34½ E.	.17	82
	Summer	21	26	15	10	5	3	0	1	3	9	9	15	7	12	5	3	0	N. 10 45 W.?	.32	N. 33 E.	.14	48
	Autumn	13	31	16	10	8	16	0	1	6	6	1	28	8	20	9	30	6	N. 14 22 W.	.34	N. 20 E.	.14	70
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 33 30 W.	.24	....	...	450

[1] Computed from the resultants for the seasons.

(Nos. 37 to 57.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
37. Long. 30° to 35° E.	Winter	9	28	8	6	0	6	5	13	6	31	7	47	33	40	33	51	8	N. 70° 42′ W.	.43	S. 78° W.	.20	107
38. Long. 35° to 40° E.	Winter	21	48	7	15	1	11	1	14	2	47	24	94	23	75	16	57	14	N. 74 43 W.	.43	S. 46 W.	.26	157
39. Long. 35° to 45° E.	Spring	13	13	9	7	0	1	1	4	2	18	7	10	2	17	5	25	4	N. 41 25 W.?	.34	S. 1 W.	.04	46
	Summer	14	27	7	6	1	2	0	3	2	7	7	7	4	19	4	12	1	N. 24 2 W.?	.43	N. 28 E.	.11	41
	Autumn	10	48	11	3	6	11	2	6	4	13	1	13	10	28	11	36	5	N. 72 3 W.	.40	S. 42 W.	.22	73
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 38 3 W.	.37	....	...	531
40. Long. 40° to 45° E.	Winter	36	59	22	23	0	19	6	14	8	36	29	122	40	110	24	87	8	N. 64 23 W.	.43	S. 57 W.	.16	214
41. Long. 45° to 50° E.	Spring	27	79	5	21	4	10	0	31	15	105	26	150	47	106	23	129	13	N. 78 27 W.	.43	S. 15 W.	.14	264
	Winter	186	180	34	76	16	50	14	94	22	376	109	729	253	635	197	625	40	N. 73 41 W.	.51	S. 57 W.	.12	879
42. Long. 50° to 55° E.	Spring	45	49	14	10	14	31	4	20	18	128	97	207	77	167	72	214	15	N. 80 12 W.	.50	S. 40½ W.	.15	394
	Winter	70	77	23	13	1	33	10	65	25	139	89	315	175	287	86	368	17	N. 72 48 W.	.48	S. 46½ W.	.10	598
43. Long. 45° to 60° E.	Summer	12	16	1	12	1	0	0	1	7	6	4	15	7	22	12	19	0	N. 43 46 W.?	.46	N. 29 E.	.14½	45
	Autumn	17	36	7	6	8	10	0	3	0	19	23	46	11	38	15	21	5	N. 63 27 W.	.37	S. 51½ E.	.07	88
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 44 W.	.44	....	...	2440
44. Long. 55° to 60° E.	Spring	8	18	7	5	0	1	1	6	0	3	6	19	25	21	17	25	4	N. 51 45 W.	.54	N. 16 W.	.11	55
	Winter	22	30	7	17	1	0	3	8	6	41	15	48	11	54	23	61	5	N. 61 28 W.	.43	S. 68 E.	.01	117
45. Long. 60° to 65° E.	Winter	31	24	6	2	0	3	0	8	3	20	8	89	30	44	31	44	1	N. 69 45 W.	.57	S. 64 W.	.10	115
46. Long. 65° to 70° E.	Winter	20	10	1	12	0	5	7	11	10	18	27	48	33	59	29	61	5	N. 73 13 W.	.51	S. 23 W.	.11	119
47. Long. 60° to 75° E.	Spring	12	37	14	6	1	1	2	11	3	15	12	40	23	39	29	47	1	N. 52 55 W.	.48	N. 54 E.	.08	98
	Summer	9	20	5	8	0	1	1	0	3	2	5	16	11	32	8	26	4	N. 42 19 W.	.54	N. 33½ E.	.19	50
	Autumn	7	10	0	1	0	0	1	3	7	9	6	15	16	28	13	6	1	N. 78 58 W.?	.57	S. 41 W.	.17	41
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 62 8 W.	.51	....	...	593
48. Long. 70° to 75° E.	Winter	11	23	6	9	4	10	3	17	11	28	39	67	49	107	34	86	8	N. 74 34 W.	.53	S. 32 W.	.10	171
49. Long. 75° to 80° E.	Winter	12	21	4	5	1	1	3	24	6	40	15	65	36	90	11	66	9	N. 80 15 W.	.52	N. 39 E.	.10	136
50. Long. 80° to 85° E.	Winter	16	3	2	2	0	2	0	15	3	30	10	36	24	40	5	66	4	N. 75 3 W.	.52	N. 30½ E.	.15	89
51. Long. 85° to 90° E.	Winter	6	27	10	2	6	1	7	1	2	16	23	46	12	57	4	29	3	N. 73 27 W.	.46	N. 48 E.	.18	84
52. Long. 75° to 100° E.	Spring	27	19	4	3	1	0	3	6	6	25	17	29	16	31	19	24	7	N. 69 40 W.	.44	N. 48 E.	.23	79
	Summer	0	0	0	0	0	0	0	8	0	13	2	24	13	11	6	3	0	S. 70 48 W.?	.72	S. 21½ W.	.26	27
	Autumn	3	3	0	0	0	1	0	6	4	13	15	48	10	49	9	27	0	N. 87 48 W.	.68	N. 77 W.	.10	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 89 53 W.	.58	....	...	676
53. Long. 90° to 95° E.	Winter	6	5	0	1	0	3	0	4	2	46	11	52	8	67	14	38	9	N. 88 23 W.	.60	N. 62 W.	.02	89
54. Long. 95° to 100° E.	Winter	2	8	0	0	3	3	0	5	0	44	22	92	47	56	13	39	4	S. 84 47 W.	.68	S. 32 E.	.11	113
55. Long. 105° to 110° E.	Winter	4	5	3	5	0	2	3	8	3	49	40	128	78	141	41	32	2	S. 88 28 W.	.73½	S. 74½ W.	.12	181
56. Long. 105° to 115° E.	Spring	12	10	2	2	1	2	0	4	5	20	25	36	19	33	11	20	5	N. 88 30 W.	.54	N. 89 11 E.	.07	69
	Summer	4	5	2	0	0	8	1	2	0	16	13	29	21	21	9	19	0	N. 89 7 W.	.56	N. 86 W.	.07	50
	Autumn	5	4	3	2	1	0	0	4	4	13	13	21	51	52	10	11	1	N. 85 3 W.	.70	N. 57 W.	.09	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 88 48 W.	.62	....	...	573
57. Long. 110° to 115° E.	Winter	10	17	9	9	2	5	1	15	12	80	28	159	55	134	37	46	5	S. 86 2 W.	.62	South.	.06	208

[1] Computed from the resultants for the seasons.

(Nos. 58 to 65.) **Indian Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
58. Long. 115° to 120° E.	Spring	8	4	4	3	0	0	0	1	5	16	16	24	16	16	5	7	2	S. 82° 15′ W.	.55	S. 5½° W.	.06	43
	Summer	4	7	0	0	0	0	0	10	5	11	12	16	15	8	4	19	0	S. 84 32 W.	.48½	S. 60 E.	.06	37
	Autumn	3	14	0	9	2	6	0	4	2	28	32	72	38	56	32	30	4	N. 87 58 W.	.60½	N. 63 W.	.07	111
	Winter	15	60	8	9	0	12	3	22	22	72	63	189	127	193	55	89	15	N. 85 18 W.	.54	S. 3 W.	.06	318
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 33 W.	.54	....	...	509
59. Long. 120° to 125° E.	Autumn	68	21	35	9	15	3	4	1	10	11	73	47	140	54	89	16	12	N. 68 3 W.	.52½	N. 4 W.	.07	203
	Winter	145	73	90	21	26	10	57	22	53	55	225	134	349	197	290	106	36	N. 72 14 W.	.49	N. 28 E.	.03	630
60. Long. 120° to 130° E.	Spring	19	6	4	5	13	1	3	15	18	10	22	24	55	32	39	11	1	N. 85 4 W.	.46	S. 15½ E.	.09	93
	Summer	16	3	3	1	0	0	3	4	7	4	18	19	28	5	22	26	2	N. 72 16 W.	.53	N. 34½ W.	.04	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 5 W.	.50	....	...	1591
61. Long. 125° to 130° E.	Autumn	36	8	14	3	11	2	7	5	9	20	40	7	55	39	26	7	4	N. 77 57 W.	.41½	S. 59½ E.	.09	98
	Winter	158	59	66	6	13	0	13	5	34	44	179	121	342	196	215	68	24	N. 70 57 W.	.59	N. 49½ W.	.10	513
62. Long. 130° to 135° E.	Spring	2	0	3	0	0	0	2	0	9	0	19	16	31	8	11	10	1	S. 85 35 W.	.67	S. 38 W.	.26	38
	Autumn	15	11	28	12	8	8	3	5	13	7	26	14	45	31	26	25	2	N. 58 24 W.	.34	N. 72½ E.	.19	93
	Winter	122	27	47	18	25	0	9	7	39	27	129	121	294	138	139	73	17	N. 72 22 W.	.57	N. 51½ W.	.08	411
63. Long. 130° to 140° E.	Summer	23	2	11	6	3	1	4	0	2	3	16	17	49	23	12	4	5	N. 71 2 W.	.51	N. 6½ W.	.05	61
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 3 W.	.49	....	...	936
64. Long. 135° to 140° E.	Spring	13	12	7	0	0	0	0	1	13	7	15	16	28	7	17	9	1	N. 77 38 W.	.48	S. 21 E.	.02	54
	Autumn	16	3	12	2	4	1	7	1	10	4	13	12	18	15	14	5	0	N. 70 47 W.	.32	S. 86 E.	.17	46
	Winter	67	18	22	16	4	1	4	1	17	34	80	94	141	82	77	33	8	N. 79 3 W.	.58	S. 85½ W.	.09	233
65. Long. 140° to 145° E.	Autumn	18	4	6	9	12	9	15	4	8	12	20	11	29	13	13	8	4	S. 83 13 W.	.19	S. 60 E.	.15½	65
	Winter	32	18	20	7	16	5	8	10	41	9	54	38	130	34	39	8	17	S. 88 32 W.	.43½	S. 58 W.	.13	162

[1] Computed from the resultants for the seasons.

(Nos. 66 to 68.) **Van Dieman's Land (Tasmania).**

Observed at the following places, viz. :—

Hobart Town, by Francis Abbot, at his private observatory, during the years 1857 to 1865 inclusive.

Kent's Group, for a period of five years, 1861 to 1866.

Port Arthur, for a period of five years, 1861 to 1866, and also for an aggregate period of 666 days, by Lempriere, in the years 1837, 1838 and 1839.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.
		North.	N.E. or bet. N. & E.	East.	S. E. or bet. S. & E.	South.	S. W. or bet. S. & W.	West.	N. W. or bet. N. & W.	Calm or var.		
66. Hobart Town.	January	15.56	7·22	6.11	24·00	6.11	9.67	6.90	16.11	16.90		
	February	14.11	5.22	4.22	26.00	7.89	7.22	4.33	15.80	17·67		
	March	15.22	5.11	6·00	20·11	7.11	8.22	8.33	22.66	28.22		
	April	14.22	5.00	4.44	14.00	6.00	9·33	6.78	30.22	30.00		
	May	18.22	5.44	2·80	6.44	5.90	11.33	8.66	37.11	42.80		
	June	17.22	3.33	2.78	3·33	7.22	7.67	8.78	39.67	45.11		
	July	18.55	5.11	3.11	6·11	5.55	8.44	8.44	37.55	39.89		
	August	17.78	5·11	3.22	10.56	6.33	10.67	6.22	33.11	35.33		
	September	14.11	5.55	3.11	10.78	7.22	9.67	7.33	32.22	22.45		
	October	15.11	6.22	5.11	17.45	7.34	8.22	7·89	25.33	15·22		
	November	11.22	9.67	5.56	19.78	5.33	9.89	8.00	20.56	9·67		
	December	14.33	5.44	6.89	27.44	7.00	6.33	6.89	18.56	12.89		
	Spring	47.66	15.55	13.24	40·55	19.01	28·88	23·77	89·99	101.02	N. 45° 23°W.	.21
	Summer	53·55	13·55	9.11	20·00	19.10	26.78	23.44	110.33	120.33	N. 44 34 W.	.32
	Autumn	40.44	21.44	13.78	48.01	19.89	27.78	23.22	78.11	47.34	N. 47 26 W.	.15
	Winter	44·00	17.88	17.22	77.44	21.00	23.22	18.12	50.47	47.46	S. 84 30 E.	.04
	The year	185.65	68.42	53.35	186.00	79.00	106.66	88.55	328.90	316.15	N. 42 6 W.	.16

(Nos. 67 and 68.) **Van Dieman's Land (Tasmania).**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or bet. N.& E.	East.	S. E. or bet. S. & E.	South.	S. W. or bet. S.& W.	West.	N. W. or bet. N.& W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.
67. Port Arthur.	January	1	6	1	8	2	6	3	4			
	February	1	4	2	7	2	5	3	4			
	March	1	5	1	7	2	5	2	8			
	April	1	4	0	5	2	8	2	8			
	May	2	2	0	3	2	7	3	12			
	June	2	3	1	1	2	6	6	9			
	July	0	1	1	2	1	6	6	14			
	August	4	2	1	2	2	8	5	7			
	September	4	2	0	3	3	6	5	6			
	October	2	5	1	6	3	6	4	4			
	November	2	3	1	5	3	5	5	6			
	December	1	6	2	10	2	5	2	3			
	Spring	63	69	17	86	57	119	58	163	11	N. 79° 9′ W.	.21
	Summer	86	53	23	31	37	134	112	185	13	N. 68 27 W.	.42
	Autumn	55	69	19	77	71	99	87	93	6	S. 75 41 W.	.18
	Win er	35	90	37	184	70	95	61	76	0	S. 23 0 E.	.19
	The year[1]	...	...	...	...	...	...	...	...	...	S. 88 1 W.	.18
68. Kent's Group.	January	2	5	4	1	1	7	10	1			
	February	2	4	5	1	0	6	9	1			
	March	3	5	5	1	1	6	8	2			
	April	4	4	3	2	1	4	9	3			
	May	4	3	2	1	1	5	10	5			
	June	2	4	4	2	1	4	9	4			
	July	3	2	2	3	2	4	11	4			
	August	3	4	2	2	1	6	9	4			
	September	3	3	2	0	1	4	14	3			
	October	3	3	4	2	1	4	12	2			
	November	3	3	3	1	0	5	13	2			
	December	2	4	3	1	1	5	13	2			
	Spring	11	12	10	4	3	15	27	10	...	N. 66 35 W.	.28
	Summer	8	10	8	7	4	14	29	12	...	N. 80 15 W.	.30
	Autumn	9	9	9	3	2	13	39	7	...	N. 78 54 W.	.40
	Winter	6	13	12	3	2	18	32	4	...	N. 87 14 W.	.27
	The year	34	44	39	17	11	60	127	33	...	N. 78 15 W.	.31

[1] Computed from the resultants for the seasons.

(Nos. 69 to 78.) **Pacific Ocean,** west of longitude 180° from Greenwich.

From observations for an aggregate period of over 4 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Time of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
69. Long. 140° to 150° E.	Spring	7	7	10	6	0	2	2	3	6	14	19	21	24	32	12	3	6	N. 89° 20′ W.	.47½	S. 69° W.	.16	59
	Summer	10	8	4	8	3	3	3	8	9	17	16	10	19	12	5	26	7	N. 83 58 W.	.28	S. 32 E.	.09	56
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 80 5 W.	.33	....	...	545
70. Long. 145° to 150° E.	Autumn	7	10	3	11	0	7	0	5	0	13	1	7	1	20	13	17	3	N. 37 49 W.?	.32	N. 33 E.	.23	39
	Winter	17	35	9	29	7	31	2	21	9	31	9	54	40	88	30	62	18	N. 60 15 W.	.33	N. 20 E.	.11	164
71. Long. 150° to 155° E.	Winter	34	5	10	0	1	0	2	1	10	6	26	5	10	1	22	12	3	N. 52 15 W.	.38	N. 13 W.	.13	50
72. Long. 150° to 160° E.	Spring	20	4	6	2	5	0	4	4	6	1	23	3	12	11	16	6	5	N. 63 39 W.?	.33	N. 69 W.	.05	43
73. Long. 155° to 160° E.	Winter	42	1	6	9	5	2	5	2	5	5	13	4	7	3	21	6	0	N. 19 36 W.?	.38½	N. 28 E.	.27	46

[1] Computed from the resultants for the seasons.

(Nos. 74 to 78.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
74. Long. 150° to 170° E.	Summer	6	9	0	0	3	2	9	4	18	5	0	0	8	3	19	6	3	N. 85° 20′ W.?	.13	S. 45½° E.	.17	32
	Autumn	6	2	0	0	4	0	0	0	3	3	18	5	5	1	15	4	1	N. 86 4 W.?	.48	S. 67 W.	.24	23
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 62 30 W.	.28½	....	...	257
75. Long. 160° to 170° E.	Spring	13	7	3	0	4	10	4	0	5	1	1	9	4	1	10	7	2	N. 9 42 W.?	.04	S. 70 E.	.26	27
	Winter	23	2	8	0	2	1	6	1	1	7	9	3	11	3	20	9	0	N. 41 1 W.?	.42	N. 7 W.	.19	36
76. Long. 170° to 175° E.	Spring	35	5	44	6	13	1	15	5	46	17	69	5	8	12	33	6	16	S. 61 30 W.	.13	S. 66 W.	.01	112
	Summer	49	1	5	3	16	3	6	9	51	7	26	5	17	3	10	0	20	S. 34 6 W.	.15	S. 33 W.	.01	77
	Winter	45	6	55	16	23	2	18	8	42	12	34	5	13	23	26	4	21	N. 19 34 E.	.08	N. 23 E.	.01	118
77. Long. 170° E. to 180°.	Autumn	27	1	24	1	9	3	11	2	18	4	14	0	9	7	9	6	13	N. 9 47 E.	.12	N. 13 E.	.14	53
	The year[1]	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 36 27 W.	.02	....	...	772
78. Long. 175° E. to 180°.	Spring	45	23	49	7	43	1	32	15	110	44	62	21	36	12	26	1	14	S. 7 18 W.	.20	S. 4½ W.	.18½	181
	Summer	10	1	19	8	10	0	27	4	16	5	13	2	10	3	14	0	1	S. 57 56 E.?	.14½	S. 65 E.	.15	48
	Winter	84	23	28	21	33	20	32	19	54	35	22	28	43	23	44	15	25	N. 45 7 W.	.07	N. 31 W.	.07½	183

[1] Computed from the resultants for the seasons.

(Nos. 79 to 83.) **Middle New Zealand.**

Observed at the following places, viz.:—

Hokitika.

Lyttleton, at Christchurch, during the years 1852 to 1854, and 1864 to 1867, both inclusive.

Nelson, by Samuel Stephens, during the years 1852 and 1853.

Wellington, by Staff-Surgeon Prendergast, during the years 1852 and 1853.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			
79. Lyttleton.[1]	January	1	11	5	0	1	7	1	4	1			
	February	1	11	4	1	1	7	0	2	1			
	March	1	7	5	1	2	10	1	2	2			
	April	0	10	5	1	1	7	1	2	3			
	May	1	7	3	2	1	10	1	1	5			
	June	2	5	4	2	0	12	2	1	2			
	July	1	3	5	2	1	12	4	1	2			
	August	0	7	3	1	1	12	2	2	3			
	September	1	8	7	1	1	8	2	1	1			
	October	1	9	6	1	1	8	1	3	1			
	November	0	6	7	2	1	7	1	6	0			
	December	1	10	8	1	1	6	1	2	1			
	Spring	2	24	13	4	4	27	3	5	10	S. 64° 34′ E.	.09	
	Summer	3	15	12	5	2	36	8	4	7	S. 34 49 W.	.19	
	Autumn	2	23	20	4	3	23	4	10	2	N. 74 34 E.	.14	
	Winter	3	32	17	2	12	20	2	8	3	N. 79 2 E.	.22	
	The year	55	376	638	60	48	750	102	142	384	S. 46 57 E.	.11	2556
80. Nelson.	The year	217	0	195	0	0	107	35	34	143	N. 18 20 E.?	24	731
81. Wellington.	The year	0	0	0	0	285	0	0	446	...	N. 85 12 W.?	.43	731
82. Aggregate.	The year	272	376	833	60	333	857	137	622	527	S. 84 51 W.	.11	
83. Hokitika.	Spring	4	20	21	9	3	20	3	20	...	N. 49 20 E.	.13½	
	Summer	6	25	16	4	1	20	5	23	...	N. 2 52 E.	.22	
	Autumn	3	29	16	14	4	26	1	7	...	S. 64 38 E.	.09	
	Winter	2	18	20	24	3	25	3	6	...	N. 74 43 E.	.25	
	The year	15	92	73	51	11	91	12	56	...	N. 81 57 E.	.12	

[1] Months and seasons for the last four years only.

ZONE No. 28.

Latitude 45° to 50° South.

The data for the study of the winds of this zone consist of observations made at 3 stations on land, for an aggregate period of 14 years 6 months; and at sea for 27 years, 6 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	nearly 19 years.
Atlantic Ocean,	....	4 years.
Indian Ocean,	....	4 years, 6 months.
Desolation Island,	1	2 years.
New Zealand,	2	12 years 6 months.

(Nos. 1 to 24.) **Pacific Ocean,** east of longitude 180° from Greenwich.

From observations for an aggregate period of nearly 12 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
1. Long. 175° to 180° W.	Winter	100	17	24	5	33	9	16	8	56	14	66	50	80	12	53	17	0	N. 76° 39′ W.	.27	N. 73° W.	.26½	187
	Spring	43	10	4	3	12	7	3	9	9	3	24	11	27	12	13	10	0	N. 54 6 W.	.28	N. 50 W.	.28	67
2. Long. 170° to 175° W.	Winter	7	6	4	5	8	8	12	8	13	4	35	12	27	17	17	14	5	S. 75 8 W.	.31½	S. 43½ W.	.24	68
3. Long. 165° to 180° W.	Summer	5	6	11	4	1	1	5	2	3	3	4	4	10	4	7	5	0	N. 28 39 W.?	.23	N. 13½ E.	.11	25
	Autumn	9	4	10	0	3	2	5	1	8	4	1	3	2	1	4	0	0	N. 57 33 E.??	.14	S. 86 E.	.25	19
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 56 7 W.	.16½	....	...	474
4. Long. 165° to 175° W.	Spring	7	5	1	0	1	18	0	6	2	4	6	13	11	10	18	3	1	N. 81 43 W.	.28	S. 70 W.	.15	36
5. Long. 165° to 170° W.	Winter	7	2	11	10	5	6	11	11	4	8	34	15	29	21	25	14	3	S. 88 11 W.	.33½	S. 62 W.	.22	72
6. Long. 160° to 165° W.	Winter	63	63	20	62	15	69	21	50	23	66	20	96	58	104	47	98	2	N. 55 22 W.	.20	S. 6 E.	.08	292
7. Long. 155° to 160° W.	Winter	46	80	8	44	24	45	20	43	20	58	51	140	79	190	80	120	26	N. 68 15 W.	.37	S. 71 W.	.18	358
8. Long. 150° to 165° W.	Spring	7	21	10	13	7	9	7	5	9	26	1	26	20	54	3	20	1	N. 71 19 W.	.29	S. 44½ W.	.09	80
	Autumn	7	13	0	6	0	2	0	3	8	13	10	23	8	25	9	27	5	N. 70 52 W.	.44	S. 78 W.	.25	53
9. Long. 150° to 155° W.	Winter	49	149	22	49	21	75	22	44	35	68	56	125	118	180	55	165	35	N. 58 29 W.	.30	S. 65 W.	.09	426
10. Long. 120° to 165° W.	Summer	10	37	8	21	19	15	1	0	0	2	3	7	9	10	1	19	1	N. 30 3 E.	.44	N. 64 E.	.44	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 42 14 W.	.26	....	...	1666
11. Long. 120° to 150° W.	Spring	9	12	12	7	6	10	0	0	2	8	5	30	15	29	10	13	2	N. 58 9 W.	.37	N. 87½ W.	.14	57
	Autumn	2	8	4	16	3	15	2	6	2	5	12	22	22	25	11	14	3	N. 75 26 W.	.29	S. 41 W.	.16	57
	Winter	23	69	22	51	16	24	28	15	32	79	21	107	52	178	48	91	20	N. 69 18 W.	.34	S. 63 W.	.16	292
12. Long. 115° to 120° W.	Winter	25	15	15	6	10	7	3	3	14	7	29	23	57	26	24	19	3	N. 70 13 W.	.40	....	...	95
13. Long. 110° to 120° W.	Spring	8	3	4	8	2	2	2	2	9	7	39	22	32	8	7	1	6	S. 69 1 W.	.51	....	...	54
	Summer	9	4	5	2	0	0	2	10	11	3	6	7	29	5	6	0	0	S. 77 32 W.?	.39	....	...	33
14. Long. 110° to 115° W.	Winter	18	7	7	0	0	9	6	3	5	2	45	25	69	20	24	15	4	N. 86 21 W.	.56	....	...	86

[1] Computed from the resultants for the seasons.

(Nos. 15 to 24.) **Pacific Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S S. E.	South.	S S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N N. W.	Calm or variable.			Direction.	Force.	
15. Long. 105° to 120° W.	Autumn	19	2	5	11	6	1	1	0	11	12	46	14	36	42	25	11	2	N. 84° 45′ W.	.51	....	...	81
16. Long. 105° to 110° W.	Winter	7	0	0	0	0	0	0	4	20	5	35	26	43	19	28	16	5	S. 84 2 W.	.66	....	...	69
17. Long. 100° to 105° W.	Winter	9	2	0	2	1	1	1	0	9	10	42	21	55	17	24	3	3	S. 82 3 W.	.69	....	...	67
17(*a*). Long. 85° to 120° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 85 18 W.	.44	....	...	905
18. Long. 95° to 110° W.	Spring	11	4	0	0	0	0	5	11	16	18	20	20	22	19	10	16	3	S. 73 41 W.	.49	....	...	58
	Summer	2	2	8	0	3	1	8	9	28	15	13	3	38	7	19	7	0	S. 59 38 W.	.41	....	...	54
19. Long. 95° to 100° W.	Winter	6	0	0	0	0	0	3	0	10	4	37	20	21	5	31	8	1	S. 82 23 W.?	.67	....	...	49
20. Long. 85° to 105° W.	Autumn	12	13	2	5	7	1	3	6	6	7	18	10	10	27	27	6	0	N. 66 21 W.	.39	....	...	53
21. Long. 85° to 95° W.	Spring	18	2	1	2	0	7	9	25	6	4	15	18	30	31	15	24	4	N. 89 53 W.	.39	....	...	73
	Summer	6	5	4	5	2	5	4	11	21	18	19	17	12	7	10	19	1	S. 56 57 W.	.33	....	...	55
	Winter	12	2	1	6	0	3	0	3	7	11	26	25	52	34	26	22	4	N. 78 19 W.	.43	....	...	78
22. Long. 80° to 85° W.	Spring	10	24	5	6	10	6	10	28	18	32	61	78	76	52	45	62	28	S. 88 2 W.	.46	S. 23° E.	.05	184
	Autumn	27	24	3	14	5	10	6	21	15	55	42	84	64	43	34	61	12	S. 89 35 W.	.44	S. 51½ E.	.05	173
	Winter	52	35	9	8	0	9	12	15	31	62	43	197	91	269	120	126	30	N. 74 53 W.	.62	N. 42 W.	.18	370
23. Long. 75° to 85° W.	Summer	12	9	4	7	0	16	11	50	26	26	18	34	33	32	18	26	9	S. 54 17 W.	.32	S. 46 E.	.29	110
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 86 42 W.	.48	....	...	1746
24. Long. 75° to 80° W.	Spring	13	10	5	6	3	4	3	3	20	13	19	30	50	47	33	25	9	N. 77 49 W.	.53	N. 24½ W.	.09	97
	Autumn	11	30	9	1	2	5	0	11	16	42	17	71	64	141	63	87	7	N. 70 37 W.	.62	N. 30 W.	.21	193
	Winter	52	97	1	10	1	0	0	14	9	177	93	291	205	411	173	287	35	N. 77 2 W.	.58	N. 39½ W.	.13	619

[1] Computed from the resultants for the seasons.

(Nos. 25 to 32.) **Atlantic Ocean.**

From observations for an aggregate period of 4 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
25. Long. 60° to 68° W.	Spring	17	31	5	7	4	7	5	4	10	25	29	64	22	39	20	32	10	N. 80° 38′ W.	.42	S. 45° W.	.10	110
	Summer	10	11	1	3	0	3	1	7	0	6	9	15	13	7	9	14	2	N. 65 43 W.?	.39	N. 35 W.	.02½	37
	Autumn	10	29	9	13	2	6	6	4	0	20	14	60	8	35	20	57	8	N. 57 54 W.	.42	N. 9½ W.	.18	100
	Winter	33	71	15	11	6	28	7	20	19	42	32	73	19	62	26	52	15	N. 64 30 W.	.27	S. 76 E.	.10	177
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 67 27 W.	.37	....	...	424
26. Long. 55° to 60° W.	Spring	6	8	0	1	0	0	1	9	0	11	11	45	29	50	34	46	5	N. 71 11 W.	.67	N. 69 W.	.17	85
	Autumn	28	30	3	9	5	5	5	3	11	19	22	29	10	30	34	26	2	N. 55 59 W.	.38	N. 70 E.	.17	90
	Winter	35	61	5	9	0	22	5	24	9	35	22	129	31	57	35	142	17	N. 60 51 W.	.44	N. 57 E.	.11	213
27. Long. 50° to 60° W.	Summer	12	6	0	4	2	1	6	2	0	19	16	38	11	13	3	9	5	S. 79 3 W.?	.47	S. 3½ E.	.24½	49
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 72 4 W.	.50	....	...	742
28. Long. 50° to 55° W.	Spring	12	10	1	0	0	0	2	1	1	5	5	25	39	32	17	61	3	N. 60 23 W.	.67	....	...	71
	Autumn	7	3	6	3	2	1	2	1	3	14	5	17	28	32	17	30	4	N. 67 33 W.	.57	....	...	58
	Winter	38	40	13	9	1	11	8	0	2	43	31	76	22	112	34	72	14	N. 63 20 W.	.50	....	...	175

[1] Computed from the resultants for the seasons.

(Nos. 29 to 32.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
29. Long. 35° to 50° W.	Spring	19	14	5	5	0	0	2	5	9	3	18	22	22	16	22	35	7	N. 57° 44′ W.	.48	N. 7¼° W.	.15	68
	Summer	9	2	0	0	0	4	4	3	4	7	6	6	9	15	8	9	2	N. 79 53 W.?	.42	S. 7¼ W.	.26	29
	Autumn	16	29	3	4	4	2	3	2	5	10	17	14	10	13	32	30	5	N. 42 10 W.	.44	N. 36 E.	.38	66
	Winter	22	17	4	0	4	10	2	3	9	15	33	57	41	21	36	36	9	N. 78 42 W.	.50	S. 45½ W.	.30	106
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 44 W.	.44	....	...	269
30. Long. 5° to 20° W.	Autumn	0	0	0	0	0	0	0	0	0	0	9	3	1	0	0	0	0	S. 43 28 W.??	.97	....	...	4
31. Long. 3° W. to 15° E.	Spring	1	0	0	0	0	0	2	0	0	0	0	1	1	1	3	0	0	N. 61 36 W.??	.55	....	...	10
32. Long. 5° to 20° E.	Winter	0	0	0	0	0	0	0	0	0	2	0	4	0	4	0	2	0	N. 72 13 W.??	.67	....	...	6

[1] Computed from the resultants for the seasons.

(Nos. 33 to 39(*a*).) **Indian Ocean,** longitude 20° to 80° east.

From observations for an aggregate period of nearly 2 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			
33. Long. 20° to 45° E.	Winter	4	9	9	1	0	0	0	0	0	6	0	55	11	7	4	40	1	N. 66° 27′ W.?	.58	49
34. Long. 45 to 50 E.	Winter	21	29	8	10	1	8	4	9	6	47	9	103	59	123	53	98	12	N. 69 42 W.	.58	200
35. Long. 40 to 60 E.	Spring	9	26	2	1	0	0	6	10	7	10	14	46	35	49	28	84	7	N. 60 54 W.	.58	111
36. Long. 50 to 55 E.	Winter	13	12	3	6	3	3	1	7	0	12	20	75	7	90	30	84	0	N. 87 18 W.	.58	122
37. Long. 55 to 65 E.	Winter	0	3	0	0	0	0	0	0	11	13	0	16	1	10	7	19	1	S. 89 57 W.?	.51	27
38. Long. 48 to 73 E.[1]	Autumn	19	0	0	5	3	1	0	0	0	1	12	7	21	27	54	5	0	N. 56 26 W.	.72	52
39. Long. 65 to 70 E.	Winter	4	4	0	12	1	2	2	11	1	40	2	31	24	61	18	28	4	N. 85 17 W.	.52	82
39(*a*). Long. 60 to 80 E.	Spring	4	3	1	0	4	1	0	0	1	3	0	27	9	22	6	23	0	N. 66 29 W.?	.65	35

[1] Chiefly from observations on board New London whale ships.

(No. 40.) **Kerguelen's Land, or Desolation Island.**

Computed from observations made by captains of New London, Connecticut, whale ships, in the years 1857 and 1858, and procured for the author by Edmund B. Jennings.

Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	
	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.
Spring	59	5	23	0	19	0	4	3	0	0	41	0	76	29	94	22	21	N. 49° 9′ W.	.55	N. 50° E.	.17
Summer	58	3	8	0	0	0	3	0	0	0	62	36	138	39	137	36	22	N. 63 54 W.	.71	N. 56½ W.	.12
Autumn	71	0	0	0	13	0	8	0	6	3	30	11	61	78	38	12	17	N. 60 59 W.	.59	N. 42 E.	.04
Winter	16	0	0	0	2	0	0	0	7	0	18	9	37	0	16	0	7	N. 86 29 W.??	.59	S. 12 W.	.22
The year[1]	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 65 16 W.	.60		

[1] Computed from the resultants for the seasons.

(Nos. 41 to 51.) **Indian Ocean,** longitude 70° to 145° east.

From observations for an aggregate period of 2½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
41. Long. 70° to 75° E.	Winter	11	12	1	0	0	0	0	16	1	13	15	77	25	77	23	59	1	N. 75° 21′ W.	.66	110
42. Long. 75 to 100 E.	Spring	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	N. 67 30 W.??	1.00	3
43. Long. 75 to 100 E.	Winter	1	3	0	0	0	0	0	0	0	12	9	20	6	6	14	14	0	N. 86 2 W.?	.65	28
44. Long. 105 to 115 E.	Winter	0	1	1	0	0	0	0	2	4	9	12	27	16	29	13	11	0	S. 89 26 W.	.73	42
45. Long. 115 to 120 E.	Winter	8	4	4	0	1	0	0	0	0	2	6	9	20	18	41	6	0	N. 58 32 W.	.74½	40
46. Long. 105 to 135 E.	Spring	9	7	0	8	3	1	3	1	1	9	20	14	31	12	23	9	4	N. 78 27 W.	.51	52
	Summer	11	2	10	0	3	0	0	0	2	0	0	7	17	5	11	0	0	N. 45 1 W.	.50	24
	Autumn	11	8	5	0	0	0	0	0	3	4	4	8	25	17	32	21	0	N. 53 9 W.	.69	46
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 59 59 W.	.59	391
47. Long. 120 to 125 E.	Winter	13	5	3	0	0	0	0	0	0	0	13	2	31	12	18	10	0	N. 61 3 W.	.70	36
48. Long. 125 to 130 E.	Winter	42	13	5	3	2	0	0	0	2	0	8	20	44	15	24	12	1	N. 59 31 W.	.55	64
49. Long. 130 to 135 E.	Winter	36	11	13	0	2	0	0	0	3	5	25	35	49	15	47	15	3	N. 63 20 W.	.60	87
50. Long. 135 to 140 E.	Winter	39	15	27	1	5	0	5	0	16	11	61	47	142	46	116	36	3	N. 71 14 W.	.62½	190
51. Long. 140 to 145 E.	Winter	55	12	17	1	6	1	12	5	4	3	39	50	165	45	92	24	9	N. 70 8 W.	.58	180

[1] Computed from the resultants for the seasons.

(Nos. 52 to 63.) **Pacific Ocean,** west of longitude 180° from Greenwich.

From observations, for an aggregate period of nearly 7 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
52. Long. 135° to 155° E.	Spring	12	21	11	7	5	10	7	12	12	19	17	25	53	25	47	26	10	N. 71° 57′ W.	.38	107
	Summer	10	3	1	0	0	0	0	0	6	39	9	16	4	4	12	13	0	N. 71 5 W.	.54	27
	Autumn	9	16	7	9	1	0	0	3	4	0	11	17	24	30	5	20	5	N. 55 19 W.	.49	54
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 6 W.	.48	797
53. Long. 145 to 150 E.	Winter	30	66	25.	27	4	9	3	2	0	31	4	49	22	127	32	51	8	N. 45 20 W.	.47	164
54. Long. 150 to 155 E.	Winter	21	7	6	0	4	0	0	3	20	13	19	14	42	35	24	7	6	N. 78 58 W.	.35	75
55. Long. 155 to 160 E.	Winter	14	6	3	0	4	1	6	2	12	15	34	18	62	15	23	6	0	N. 85 54 W.	.57½	74
56. Long. 155 to 165 E.	Spring	7	5	5	3	7	4	18	4	5	1	18	9	15	11	21	11	8	N. 80 36 W.	.22	51
57. Long. 160 to 165 E.	Winter	42	8	5	10	13	7	2	11	21	17	44	28	91	31	37	12	5	N. 52 55 W.	.60	122
58. Long. 155 to 170 E.	Summer	23	2	12	2	24	5	17	7	1	5	11	2	12	0	3	1	2	N. 84 49 E.	.22	43
59. Long. 165 to 170 E.	Spring	16	5	20	3	8	0	9	3	3	0	39	5	23	9	28	2	6	N. 58 59 W.	.29	57
	Winter	30	9	7	9	24	4	35	7	16	28	46	34	111	19	56	26	5	S. 89 1 W.	.39	156
60. Long. 170 to 175 E.	Spring	162	39	9	14	24	4	29	9	77	33	109	32	65	8	46	2	31	N. 50 4 W.	.14	255
	Winter	113	30	62	11	24	2	32	31	101	43	91	38	78	10	50	26	22	S. 85 30 W.	.16½	255
61. Long. 155 E. to 180°.	Autumn	13	4	19	2	8	0	7	4	11	2	8	2	5	2	12	6	2	N. 16 50 E.	.18	36
	The year[1]	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	N. 52 55 W.	.15	1676
62. Long. 170 E. to 180.	Summer	37	6	16	6	0	9	1	4	14	11	26	12	27	4	9	3	11	N. 73 35 W.	.21	66
63. Long. 175 E. to 180.	Spring	157	15	43	4	22	7	26	14	67	35	98	11	58	38	56	25	19	N. 64 52 W.	.23	230
	Winter	157	33	76	11	49	9	50	32	112	62	186	30	68	25	66	21	5	S. 67 25 W.	.14½	331

[1] Computed from the resultants for the seasons.

(Nos. 64 to 66.) **Southern New Zealand.**

Observed at the following places, viz.:—
Dunedin, for an aggregate period of 4½ years, 1862–4 and 1866–7.
Southland, for an aggregate period of 8 years, 1858 to 1867.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.
64. Southland.	January	1	0	3	9	0	1	8	9					
	February	1	0	2	8	0	0	10	7					
	March	1	0	2	6	0	1	11	10					
	April	1	0	2	4	1	0	11	11					
	May	1	0	4	2	0	0	9	15					
	June	2	0	5	2	0	1	8	12					
	July	2	1	7	4	0	0	5	12					
	August	1	0	4	3	0	1	10	12					
	September	2	0	6	6	1	1	6	8					
	October	1	0	2	9	0	1	9	9					
	November	1	0	3	8	1	1	8	8					
	December	1	0	3	9	1	1	9	7					
	Spring	3	0	8	12	1	1	31	36	...	N. 65° 55′ W.	.49		
	Summer	5	1	16	9	0	2	23	36	...	N. 48 54 W.	.39		
	Autumn	4	0	11	23	2	3	23	35	...	N. 69 41 W.	.27		
	Winter	3	0	8	26	1	2	27	23	...	S. 85 13 W.	.21		
	The year	15	1	43	70	4	8	104	120	...	N. 67 46 W.	.30		
65. Dunedin.	January	2	7	1	2	3	4	5	2	5				
	February	1	6	2	2	2	4	5	1	5				
	March	2	5	1	1	2	6	7	1	6				
	April	1	4	1	1	1	5	8	2	7				
	May	1	3	1	0	1	4	10	3	8				
	June	1	5	0	0	1	6	11	1	5				
	July	2	5	1	0	1	5	6	2	9				
	August	2	5	1	1	1	5	8	2	6				
	September	3	7	1	2	1	4	5	1	6				
	October	2	7	1	3	2	6	4	2	4				
	November	2	7	1	2	2	6	4	2	4				
	December	2	9	2	2	3	4	3	1	5				
	Spring	4	12	3	2	4	15	25	6	21	N. 88 29 W.	.30		
	Summer	5	15	2	1	3	16	25	5	20	N. 80 57 W.	.29		
	Autumn	7	21	3	7	5	16	13	5	14	N. 50 43 W.	.07		
	Winter	5	22	5	6	8	12	13	4	15	N. 10 13 E.	.30		
	The year	21	70	13	16	20	59	76	20	70	N. 78 42 W.	.17		
66. South Island.	Spring	5	17	13	13	4	16	16	16	...	N. 53 12 W.	.06½	S. 80° E.	.09
	Summer	4	21	12	14	5	13	17	14	...	S. 6 38 E.	.06	N. 86 E.	.14½
	Autumn	4	15	10	7	4	18	24	19	...	N. 75 29 W.	.25	N. 83 W.	.10
	Winter	5	12	12	6	2	22	23	18	...	N. 80 33 W.	.27	S. 87 W.	.13
	The year	18	65	47	40	15	69	80	67	...	N. 70 41 W.	.14		

ZONE No. 29.

LATITUDE 50° TO 55° SOUTH.

The data for the study of the winds of this zone consist of observations made at 3 stations on land, for an aggregate period of nearly 12 years 8 months; at sea for 17 years 3 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Pacific Ocean,	....	9 years 6 months.
South America and adjacent islands,	2	8 years 8 months.
Atlantic Ocean,	....	7 years 6 months.
Antarctic Ocean,	....	3 months.
Heard's Island,	1	nearly 4 years.

(Nos. 1 to 26.) **Pacific Ocean,** east of longitude 180° from Greenwich.

From observations for an aggregate period of over 9½ years, collected and classified from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Captain M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Number of days.
1. Long. 165° W. to 180°	Summer	2	0	1	2	3	4	1	4	5	4	0	0	0	1	0	0	0	S. 50° 0′ E.??	.52	....	9
	Winter	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	S. 84 16 W.???	.70	....	3
2. Long. 155° to 165° W.	Winter	14	8	9	12	6	13	0	6	1	23	2	16	12	25	10	31	3	N. 45 40 W.	.28	....	64
3. Long. 150° to 155° W.	Winter	26	26	2	13	4	13	6	5	0	20	23	39	19	30	38	58	2	N. 50 25 W.	.42	....	108
4. Long. 120° to 165° W.	Spring	5	24	8	6	0	22	3	10	0	24	9	19	1	16	4	9	0	N. 51 21 E.	.07	S. 16¾° E.	53
	Summer	1	16	8	24	10	26	0	26	4	29	16	39	38	45	9	21	0	S. 65 10 W.	.22	S. 22¼ W.	104
	Autumn	5	8	0	5	5	2	0	1	0	0	0	0	4	7	3	0	0	N. 7 35 E.??	.44	N. 27¼ E.	13
	Winter	49	58	21	39	11	29	6	20	14	57	30	71	46	97	53	109	5	N. 51 41 W.	.36	N. 63 W.	238
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 38 26 W.	.17	....	408
5. Long. 120° to 150° W.	Winter	9	24	10	14	1	3	0	9	13	14	5	16	14	42	5	20	0	N. 59 12 W.	.32	....	67
6. Long. 110° to 120° W.	Winter	20	13	13	2	16	2	8	1	7	7	32	22	44	31	45	13	10	N. 68 18 W.	.44	....	95
7. Long. 105° to 110° W.	Winter	5	2	1	0	1	2	2	4	10	15	38	16	72	23	22	12	4	S. 82 41 W.	.68	....	76
8. Long. 100° to 120° W.	Spring	23	9	3	10	13	13	12	3	10	2	30	22	55	16	29	11	5	N. 79 24 W.	.33	N. 55 E.	89
	Summer	7	0	9	1	19	20	19	9	9	9	34	2	24	10	18	13	2	S. 32 31 W.	.17	S. 62¼ E.	68
	Autumn	12	7	0	7	2	0	0	0	3	3	23	9	33	19	13	3	0	N. 78 50 W.?	.57	N. 60¾ W.	45
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 88 0 W.	.39	....	447
9. Long. 100° to 105° W.	Winter	5	0	5	0	3	2	7	1	5	7	22	27	81	24	28	0	3	S. 87 34 W.	.70	....	73
10. Long. 95° to 100° W.	Winter	2	12	0	4	0	1	0	6	11	8	17	39	30	54	32	32	4	N. 76 48 W.	.63	....	84
11. Long. 90° to 95° W.	Winter	10	13	3	3	0	0	1	6	3	19	14	52	31	75	33	40	3	N. 72 56 W.	.65	N. 66 W.	119
12. Long. 85° to 100° W.	Spring	15	24	7	14	14	14	19	21	11	30	18	76	37	58	46	24	12	N. 87 52 W.	.34	S. 28½ E.	147
	Summer	8	22	4	14	6	17	17	18	7	21	16	38	7	15	23	11	3	S. 58 49 W.	.15	S. 57¾ E.	82
	Autumn	7	8	6	3	1	3	6	5	3	9	13	34	31	64	50	28	5	N. 68 51 W.	.62	N. 53¾ W.	92
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 79 1 W.	.38	....	640
13. Long. 85° to 90° W.	Winter	11	4	0	9	4	2	2	9	6	28	14	46	18	88	47	52	6	N. 72 2 W.	.59	....	115
14. Long. 80° to 85° W.	Spring	34	27	10	15	6	17	12	27	11	32	33	65	36	78	42	75	26	N. 68 18 W.	.31	N. 72½ E.	215
	Summer	8	16	10	21	8	23	17	26	11	32	26	35	31	20	23	26	15	S. 60 14 W.	.18	S. 43¾ E.	116
	Autumn	25	39	13	5	8	10	7	37	23	33	29	65	44	75	50	92	10	N. 69 27 W.	.40	N. 43½ W.	188
	Winter	75	80	18	17	7	7	6	24	29	55	47	166	159	184	145	160	28	N. 65 15 W.	.56	N. 51½ W.	402
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 29 W.	.35	....	921
15. Lat. 50° to 52° S., long. 83° to 89° W.	Spring	2	11	0	1	1	7	9	9	4	12	1	14	9	25	16	30	1	N. 65 59 W.	.36	....	51
	Winter	9	4	0	6	0	0	0	1	3	15	8	37	15	28	21	34	2	N. 72 2 W.	.61	....	61
16. Lat. 52° to 54° S., long. 83° to 89° W.	Spring	12	15	2	5	3	5	0	11	7	15	7	19	9	27	23	12	5	N. 69 6 W.	.36	....	59
	Winter	16	3	0	6	4	1	0	3	0	17	13	31	17	40	16	43	3	N. 67 15 W.	.58	....	71
17. Lat. 50° to 52° S., long. 81° to 89° W.	Summer	8	10	2	12	3	11	4	9	6	14	7	24	7	10	14	15	0	N. 85 37 W.	.17	S. 66 E.	52
	Autumn	8	17	4	1	4	1	5	19	4	7	11	33	18	20	20	24	0	N. 76 4 W.	.39	S. 18½ E.	65
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 74 14 W.	.40	....	351
18. Lat. 52° to 54° S., long. 81° to 89° W.	Summer	4	10	5	12	10	19	15	4	2	7	3	13	9	12	15	19	8	N. 11 27 E.	.10	S. 82 E.	56
	Autumn	11	9	0	0	1	2	5	18	7	20	14	27	11	18	18	36	3	N. 75 40 W.	.45	S. 68 W.	67
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 66 15 W.	.37	....	385
19. Lat. 50° to 52° S., long. 81° to 83° W.	Spring	10	4	4	9	0	0	0	1	9	15	5	21	16	22	15	23	10	N. 70 46 W.	.46	....	55
	Winter	1	3	1	2	1	4	1	2	8	7	2	32	30	55	20	27	5	N. 75 35 W.	.66	....	67
20. Lat. 52° to 54° S., long. 81° to 83° W.	Spring	8	3	3	3	2	3	1	8	0	9	7	9	11	22	18	23	6	N. 66 7 W.?	.44	....	45
	Winter	16	15	0	3	0	2	0	8	1	14	5	48	25	59	30	30	5	N. 69 0 W.	.62	....	87
21. Lat. 50° to 52° S., long. 79° to 81° W.	Winter	11	9	0	4	0	1	4	23	8	18	11	55	22	39	31	32	3	N. 86 8 W.	.51	....	90
22. Lat. 52° to 54° S., long. 79° to 81° W.	Spring	8	6	0	1	3	5	1	2	5	17	4	34	10	19	7	22	0	N. 85 34 W.?	.48	....	48
	Autumn	5	5	3	3	1	5	0	6	6	5	7	32	16	36	12	33	8	N. 71 45 W.	.53	....	61
	Winter	9	12	3	1	0	0	3	7	4	11	19	28	43	51	38	31	5	N. 72 14 W.	.64	....	90

[1] Computed from the resultants for the seasons.

(Nos. 23 to 26.) **Pacific Ocean.—*Continued.***

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	
23. Lat. 50° to 52° S., long. 75° to 81° W.	Spring	7	15	1	2	0	1	1	8	4	9	13	30	14	62	24	25	3	N. 70° 5′ W.	.60	N. 32° W.	73
	Summer	12	1	0	1	0	2	1	3	7	14	5	19	6	8	13	19	1	N. 81 0 W.?	.44	S. 54¼ E.	40
	Autumn	4	8	2	4	1	6	2	5	7	19	7	29	10	53	30	17	8	N. 78 8 W.	.52	....	71
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 7 W.	.53	....	334
24. Lat. 52° to 54° S., long. 75° to 81° W.	Summer	2	5	0	4	2	6	5	10	11	30	21	18	21	24	12	12	3	S. 63 29 W.	.47	N. 40¾ E.	63
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 82 9 W.	.54	....	462
25. Lat. 50° to 52° S., long. 75° to 79° W.	Winter	6	8	0	4	0	2	3	6	0	8	2	26	31	41	19	25	1	N. 69 35 W.	.63	.. ..	61
26. Lat. 52° to 54° S., long. 75° to 79° W.	Spring	2	4	0	0	0	0	0	8	4	6	6	19	6	35	12	23	2	N. 74 58 W.?	.61	....	42
	Autumn	6	4	0	1	0	1	0	4	0	9	8	29	25	56	22	24	4	N. 73 20 W.	.72	....	64
	Winter	17	16	2	1	0	0	0	0	1	27	16	31	37	59	23	46	5	N. 67 53 W.	.64	....	94

[1] Computed from the resultants for the seasons.

(Nos. 26½ and 27.) **Patagonia and Falkland Islands.**

Observed as follows, viz. :—

Port Louis, Falkland Islands, by Sir James Ross, for an aggregate period of 172 days, in the years 1842 and 1843, and by Charles Darwin, for 77 days, in the year 1832.

Punta Arenas, for an aggregate period of eight years, viz.: Spring of 1853 to 1855; and end of 1858 to 1863, by Gov. Jorje Schyte; and July, 1857, to June, 1858, by Dr. J. Burns; with gaps completed, some of them from Prof. Ig. Domeyko.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	Force.	
26½. Punta Arenas.	Spring	16	...	13	...	4	...	2	...	5	...	16	...	29	...	16	...	...	N. 63° 6′ W.	.41	N. 82° E.	.08	
	Summer	19	...	12	...	7	...	0	...	3	...	12	...	31	...	16	...	...	N. 53 17 W.	.44	N. 45½ E.	.13	
	Autumn	12	...	7	...	3	...	1	...	7	...	14	...	37	...	20	...	...	N. 75 33 W.	.53½	S. 65 W.	.08	
	Winter	10	...	5	...	4	...	1	...	7	...	13	...	41	...	19	...	...	N. 79 42 W.	.56	S. 55 W.	.13	
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 69 11 W.	.48			
27. Port Louis.	Spring	5	0	2	0	2	0	3	3	12	13	21	10	38	8	10	4	1	S. 70 18 W.?	.61	....	...	132
	Summer	5	2	4	3	1	1	1	1	3	1	18	7	24	8	8	4	1	N. 87 46 W.?	.53	....	...	92
	Autumn	1	0	0	0	0	0	1	0	1	0	0	0	2	0	3	0	0	N. 67 32 W.???	.46	....	...	8
	Winter	0	0	0	0	0	0	0	0	3	8	12	0	4	0	1	4	1	S. 50 52 W.??	.68	....	...	17
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 78 3 W.	.53	....	...	249

[1] Computed from the resultants for the seasons.

(Nos. 27(*a*) to 49.) **Atlantic Ocean.**

From observations for an aggregate period of 7½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	
27(*a*). Lat. 50° to 52° S., long. 65° to 67° W.	Winter	5	16	3	3	4	4	1	2	2	10	1	15	5	35	9	14	5	N. 54° 18′ W.?	.43	....	45
28. Lat. 50° to 55° S., long. 60° to 70° W.	Spring	27	55	8	19	3	4	1	26	11	38	38	78	53	94	44	58	6	N. 71 27 W.	.46	N. 71½° W.	188
	Summer	8	6	0	5	1	3	8	15	0	8	3	20	14	19	5	18	1	N. 83 20 W.?	.33	S. 35¼ E.	45
	Autumn	27	52	11	7	0	6	3	3	3	20	34	84	34	77	36	51	12	N. 64 40 W.	.52	N. 37 W.	153
	Winter	34	83	19	19	15	8	3	11	1	56	38	140	64	82	34	66	6	N. 70 26 W.	.43	N. 19 E.	226
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 71 23 W.	.43	....	612

[1] Computed from the resultants for the seasons.

(Nos. 29 to 49.) **Atlantic Ocean.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Number of days.
29. Lat. 50° to 52° S., long. 63° to 67° W.	Spring	27	38	16	20	3	4	2	12	10	13	10	56	9	34	17	52	4	N. 41° 0′ W.	.33	N. 44½° E.	109
	Summer	14	10	3	4	0	0	3	6	5	11	3	15	15	11	7	9	3	N. 70 59 W.?	.35	S. 34¼ E.	40
	Autumn	10	22	5	10	3	9	4	6	1	11	5	29	23	24	14	13	2	N. 61 18 W.	.34	N. 29½ W.	64
	Winter	28	69	5	18	6	9	5	15	6	32	26	101	23	45	21	53	15	N. 65 33 W.	.35	S. 43¾ W.	159
	The year[1]	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	N. 60 8 W.	.34	....	372
30. Lat. 52° to 54° S., long. 63° to 67° W.	Spring	12	17	7	7	4	5	3	9	7	16	8	28	20	32	14	28	6	N. 66 35 W.	.37	....	74
	Autumn	16	26	16	8	2	4	4	3	6	9	10	31	14	53	20	22	6	N. 51 28 W.	.44	....	83
31. Lat. 52° to 54° S., long. 63° to 65° W.	Winter	8	29	3	13	3	6	3	5	3	21	20	57	31	43	18	29	12	N. 76 57 W.	.44	....	101
32. Lat. 50° to 52° S., long. 61° to 63° W.	Spring	7	18	0	0	0	0	0	5	1	19	4	43	18	31	11	19	1	N. 79 52 W.	.59	....	59
	Autumn	14	10	1	3	0	0	0	0	0	6	15	41	10	35	2	22	2	N. 79 7 W.	.64	....	50
	Winter	10	49	6	3	5	6	0	5	9	28	18	91	37	32	17	37	6	N. 77 53 W.	.46	....	118
33. Lat. 52° to 54° S., long. 61° to 67° W.	Summer	10	6	1	7	2	2	2	7	9	6	7	21	13	17	5	17	0	N. 79 57 W.?	.37	....	44
34. Lat. 52° to 54° S., long. 61° to 63° W.	Winter	7	20	4	3	1	9	0	7	3	22	16	42	23	22	10	11	9	S. 76 51 W.	.47	....	70
35. Lat. 52° to 54° S., long. 59° to 63° W.	Spring	2	6	0	7	0	3	0	8	2	11	12	25	13	36	14	22	4	N. 79 47 W.	.53	....	55
	Autumn	1	9	0	0	0	0	0	2	1	9	9	38	6	23	7	11	4	N. 85 48 W.?	.62	....	37
36. Lat. 50° to 52° S., long. 55° to 63° W.	Summer	3	3	3	2	0	1	2	1	0	6	9	7	5	10	6	11	0	N. 72 16 W.?	.46	N. 81¾ E.	23
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 10 W.	.52	....	209
37. Lat. 52° to 54° S., long. 55° to 67° W.	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 22 W.	.45	....	868
38. Lat. 52° to 54° S., long. 57° to 61° W.	Winter	7	18	0	15	4	3	2	2	7	33	15	75	17	43	23	48	10	N. 80 43 W.	.49	....	107
39. Lat. 50° to 52° S., long. 55° to 61° W.	Spring	14	7	3	4	1	6	4	12	0	7	9	31	16	43	11	39	4	N. 65 16 W.	.49	....	70
	Autumn	3	13	2	7	0	1	1	4	1	7	10	26	15	34	5	26	1	N. 68 38 W.	.53	....	52
	Winter	6	29	4	13	4	3	0	4	3	28	23	111	38	57	15	47	24	N. 83 36 W.	.53	....	136
40. Lat. 52° to 54° S., long. 55° to 61° W.	Summer	3	12	4	2	2	6	0	6	9	6	10	34	5	10	14	15	0	N. 88 1 W.?	.39	....	46
41. Lat. 50° to 55° S., long. 55° to 60° W.	Spring	16	13	12	4	0	11	4	9	3	9	29	40	32	58	22	63	4	N. 64 56 W.	.51	S. 79 W.	110
	Summer	15	14	8	5	3	4	0	2	2	6	6	26	2	7	13	14	0	N. 40 54 W.?	.37	N. 71½ E.	42
	Autumn	25	16	4	1	0	1	1	4	3	12	26	34	8	30	14	35	5	N. 65 10 W.	.50	S. 79 W.	73
	Winter	30	66	8	14	4	3	6	9	10	35	28	126	34	91	33	72	15	N. 68 28 W.	.48	S. 52 W.	195
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 15 W.	.46	....	420
42. Lat. 52° to 54° S., long. 55° to 59° W.	Spring	10	9	5	7	2	2	2	2	3	24	17	43	16	24	17	35	2	N. 79 1 W.	.49	....	73
	Autumn	13	8	3	3	0	2	1	1	3	19	6	30	19	35	17	24	7	N. 72 6 W.	.56	....	64
43. Lat. 52° to 54° S., long. 55° to 57° W.	Winter	9	27	7	2	4	0	2	4	1	9	11	42	8	29	16	22	12	N. 61 16 W.	.45	....	68
44. Lat. 50° to 55° S., long. 50° to 55° W.	Spring	9	7	2	4	1	1	0	4	10	9	19	31	13	13	16	30	5	N. 79 48 W.	.48	S. 6 W.	58
	Summer	3	15	3	4	0	0	0	0	2	5	5	22	9	17	1	31	0	N. 53 43 W.?	.55	N. 7½ E.	39
	Autumn	4	24	4	3	1	1	0	0	0	3	4	20	4	25	16	16	1	N. 43 56 W.?	.58	N. 17 E.	42
	Winter	13	16	3	7	1	1	1	2	4	10	29	41	18	36	21	38	4	N. 70 38 W.	.54	S. 36½ W.	82
	The year[1]	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	N. 61 11 W.	.52	....	221
45. Lat. 50° to 55° S., long. 35° to 50° W.	Spring	4	1	0	0	0	0	0	4	1	3	0	2	0	5	0	2	2	N. 86 10 W.??	.27	S. 14 E.	8
	Summer	1	0	0	2	0	0	0	1	0	0	0	1	0	0	3	7	0	N. 21 10 W.??	.65	N. 18 E.	5
	Autumn	0	1	0	0	0	0	0	0	0	0	2	0	3	1	1	6	1	N. 52 21 W.??	.67	N. 73½ W.	5
	Winter	4	5	5	3	0	0	1	0	5	1	8	8	4	6	8	6	3	N. 62 28 W.?	.37	S. 4 E.	22
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 48 35 W.?	.45	....	40
46. Lat. 50° to 55° S., long. 35° W. to 6° E.	Winter	1	0	0	0	0	0	2	1	1	0	1	0	4	2	2	0	0	S. 82 5 W.??	.44½	....	14
47. Lat. 50° to 55° S., long. 3° W. to 13° E.	Spring	0	0	0	0	0	0	0	0	1	0	0	2	2	2	2	0	0	N. 86 82 W.???	.79	....	9
48. Lat. 50° to 55° S., long. 6° to 30° E.	Winter	2	0	1	0	0	0	0	0	1	0	1	0	2	0	2	0	0	N. 54 45 W.???	.47	....	9
49. Lat. 50° to 55° S., long. 20° to 22° E.[2]	Winter	1	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	N. 68 23 W.??	.74	....	5

[1] Computed from the resultants for the seasons.

[2] Magnetic variation 17° 9′.

(Nos. 50 to 56.) **Antarctic Ocean and Heard's Island.**

Observed as follows, viz. :—

At Heard's Island, by officers of whale ships from New London, Connecticut, for an aggregate period of nearly four years, in the years 1856 to 1859 inclusive.

At Sea, for an aggregate period of 83 days, by Capt. Cook, New London whalers and others. The observations of most of the latter were collected and classified at the United States Naval Observatory.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
50. At sea, Long. 51° to 54° E.[1]	Winter	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	N. 39° 42′ W.???	.91	....	...	4
51. Heard's Island.	Spring	855	32	184	7	174	0	24	0	102	0	211	65	826	152	595	148	45	N. 44 27 W.	.55	N. 28¾° E.	.05	285
	Summer	423	0	84	0	69	0	0	0	63	12	45	24	546	102	294	36	0	N. 49 24 W.	.61	N. 60 W.	.05	283
	Autumn	625	0	77	7	173	0	27	0	66	6	148	51	641	56	338	72	47	N. 47 17 W.	.50	S. 68 E.	.05	389
	Winter	743	15	46	6	269	14	21	0	78	6	186	35	1095	179	448	68	97	N. 55 14 W.	.53	S. 20 W.	.06	431
	The year[3]	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	N. 49 7 W.	.55			
52. At sea, Long. 69° to 75° E.	Autumn	6	1	7	0	0	3	0	0	0	0	0	0	11	5	13	1	1	N. 36 55 W.??	.59	....	...	16
53. At sea, Long. 65° to 97° E.	Winter	1	0	0	0	0	0	0	0	0	0	1	0	6	0	6	0	0	N. 82 19 W.??	.83	....	...	0
54. At sea, Long. 110° to 135° E.	Winter	24	24	1	1	3	1	24	0	1	0	5	0	8	0	60	82	6	N. 30 34 W.??	.70	....	...	10
55. At sea, Long. 155° to 165° E.	Spring	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	N. 48 59 W.???	.92	....	...	2
	Winter	0	0	0	0	0	2	11	4	1	4	9	9	10	9	35	0	2	N. 86 16 W.???	.50	....	...	4
56. At sea, Long. 165° E. to 180°[2]	Autumn	0	0	0	0	0	0	0	0	0	1	0	0	7	2	0	0	0	S. 89 4 W ??	.92	....	...	10
	Winter	3	0	1	0	0	0	2	1	1	1	7	3	3	4	2	0	0	S. 74 54 W.?	.51	....	...	28

[1] Observed by Capt. Cook in the winter of 1775–6.
[2] Including Auckland Islands and Campbell's Island.
[3] Computed from the resultants for the seasons.

Zone intermediate between 29 and 30.

Latitude 54° to 56° South.

The material for this zone does not belong exclusively either to the one that precedes or to the one that follows, the limit between the two being the parallel of latitude 55°. It is thought best, therefore, to arrange it in a zone by itself.

(Nos. 1 to 16.) **Off Cape Horn**, longitude 55° to 89° west.

From observations for an aggregate period of over 6½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	
1. Long. 83° to 89° W.	Spring	6	7	3	10	2	4	3	2	8	17	5	37	11	52	16	29	5	N. 74° 1′ W.	.49	N. 63° W.	72
	Winter	6	13	1	4	0	0	1	9	3	18	15	28	12	68	38	22	2	N. 72 45 W.	.61	N. 65¼ W.	80
2. Long. 81° to 89° W.	Summer	0	19	3	14	8	7	5	18	3	12	9	21	6	11	10	13	5	S. 75 12 W.	.07	S. 70½ E.	55
	Autumn	7	10	1	6	0	1	4	15	7	8	3	28	13	29	14	14	1	N. 82 23 W.	.42	S. 37¾ W.	54
	The year[1]	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 76 27 W.	.40	....	414
3. Long. 81° to 83° W.	Spring	8	8	1	8	0	2	0	11	10	7	7	20	15	27	15	32	5	N. 67 31 W.	.44	....	59
	Winter	13	19	2	7	1	8	2	15	6	16	4	35	37	48	34	33	5	N. 67 54 W.	.49	....	95

[1] Computed from the resultants for the seasons.

(Nos. 4 to 16.) **Off Cape Horn.**—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.	Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.			Direction.	
4. Long. 79° to 81° W.	Spring	8	10	1	3	3	8	1	5	5	10	10	20	17	39	17	33	2	N. 65° 42′ W.	.50	....	64
	Autumn	4	5	2	1	1	3	4	11	8	13	10	16	23	44	15	19	1	N. 85 3 W.	.52	....	60
	Winter	16	14	6	5	5	0	0	11	5	16	12	43	18	47	39	50	7	N. 62 39 W.	.53	....	98
5. Long. 77° to 81° W.	Summer	4	12	1	3	14	10	3	12	5	7	21	41	13	18	11	17	6	N. 82 2 W.	.14	S. 74° E.	66
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 77 0 W.	.42	....	530
6. Long. 77° to 79° W.	Spring	2	5	8	7	4	5	3	6	8	16	15	40	12	27	10	18	1	S. 83 10 W.	.42	....	62
	Autumn	1	2	2	4	0	0	1	11	5	18	5	31	7	48	14	34	5	N. 80 16 W.	.55	....	63
	Winter	15	5	5	5	4	5	1	7	7	19	15	58	34	85	26	56	5	N. 73 6 W.	.60	....	117
7. Long. 75° to 77° W.	Winter	6	7	5	4	0	0	0	5	5	15	25	44	24	45	36	38	8	N. 78 16 W.	.58	....	92
8. Long. 69° to 77° W.	Spring	1	10	0	6	1	2	1	4	13	24	9	36	10	21	18	18	5	S. 82 47 W.	.47	S. 62¼ E.	60
	Summer	1	3	0	4	4	2	0	2	8	13	9	27	1	16	5	11	0	S. 74 33 W.?	.50	S. 30¼ E.	35
	Autumn	2	6	1	2	2	1	0	8	4	16	14	38	38	42	14	18	4	N. 89 44 W.	.64	N. 77½ W.	70
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 88 25 W.	.55	....	317
9. Long. 69° to 75° W.	Winter	2	1	0	2	0	0	0	0	0	18	4	31	19	58	24	18	3	N. 78 1 W.	.75	....	60
10. Long. 65° to 69° W.	Winter	9	20	14	13	0	2	4	3	11	14	12	29	9	27	10	23	11	N. 60 31 W.	.30	....	70
11. Long. 63° to 69° W.	Spring	17	25	10	12	3	6	4	19	4	19	24	73	26	66	24	53	10	N. 72 23 W.	.45	N. 30¼ E.	132
	Summer	6	6	0	10	3	1	1	10	3	19	34	34	24	29	14	11	1	S. 78 45 W.	.53	S. 19¼ W.	69
	Autumn	24	33	5	1	3	3	3	1	7	21	25	50	30	77	33	67	16	N. 61 24 W.	.55	N. 12½ W.	133
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 77 3 W.	.46	....	600
12. Long. 63° to 65° W.	Winter	37	36	15	14	8	7	4	17	12	53	29	116	54	73	29	65	20	N. 79 9 W.	.44	....	196
13. Long. 61° to 63° W.	Spring	6	10	1	4	0	1	8	4	5	24	16	37	9	27	10	29	6	S. 89 33 W.	.46	S. 88¼ E.	66
	Summer	2	6	3	6	3	1	0	4	3	16	16	34	4	5	6	15	2	S. 74 43 W.?	.43	S. 34½ E.	42
	Autumn	11	7	1	0	0	4	2	3	3	7	8	32	29	19	7	12	2	N. 84 35 W.?	.58	N. 56 W.	49
	Winter	9	18	5	3	1	6	2	10	8	25	19	74	41	51	23	40	20	N. 84 45 W.	.53	N. 36 W.	118
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 89 41 W.	.49	....	275
14. Long. 59° to 61° W.	Winter	12	21	14	12	0	3	1	5	6	16	18	44	32	29	23	27	5	N. 69 28 W.	.44	....	89
15. Long. 55° to 61° W.	Spring	13	33	6	8	1	5	0	5	3	19	21	55	23	50	21	51	11	N. 64 33 W.	.50	S. 87 W.	108
	Summer	24	26	12	10	7	6	0	10	5	21	3	49	7	19	13	29	4	N. 50 15 W.	.30	S. 77¾ E.	82
	Autumn	12	22	4	4	3	4	0	1	2	11	10	28	11	29	9	38	4	N. 52 24 W.	.49	N. 7¼ W.	64
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 59 31 W.	.44	....	424
16. Long. 55° to 59° W.	Winter	15	19	12	5	1	1	0	1	0	9	16	50	29	29	18	30	7	N. 65 17 W.	.54	....	81

[1] Computed from the resultants for the seasons.

ZONE No. 30.

Latitude 55° to 60° South.

The data for the study of the winds of this zone consist of observations made at 2 stations on land, for an aggregate period of 6 months; at sea for 14 years 6 months. The distribution is as follows:—

Where observed.	No. of Stations.	Aggregate length of time.
Antarctic Ocean,	....	over 14 years 6 months.
Terra del Fuego,	2	6 months.

(Nos. 1 to 26.) **Antarctic Ocean,** longitude 67° west to 180°.

From observations for an aggregate period of 9½ years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
1. Long. 175° W. to 180°.	Winter	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	S. 84° 16′ W.	.70	....	...	3
2. Long. 120° to 165° W.	Spring	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N. 22 30 E.	1.00	N. 50° E.	.73½	1
	Summer	0	0	0	6	0	0	0	0	0	4	3	3	0	2	0	3	0	S. 73 44 W.	.19	S. ½ E.	.50	7
	Autumn	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	3	1	N. 24 34 W.	.77	N. 28½ W.	.28	8
	Winter	6	3	2	0	1	2	0	0	0	3	4	14	5	11	7	6	0	N. 68 43 W.	.60	S. 58 W.	.44	21
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 22 18 W.	.49	....	...	32
3. Long. 85° to 115° W.	Spring	0	16	13	19	4	4	11	12	13	10	2	16	23	35	8	16	4	N. 66 27 W.	.18	S. 55¼ E.	.19	69
	Summer	1	5	5	1	10	6	0	0	1	0	0	8	11	13	8	3	5	N. 42 41 W.	.29	N. 78½ E.	.13	26
	Autumn	3	3	0	3	6	2	2	0	0	6	13	19	13	22	22	20	0	N. 70 49 W.	.57	S. 89½ W.	.20	45
	Winter	9	29	6	3	3	5	11	14	3	12	7	24	32	52	46	42	2	N. 56 7 W.	.49	N. 41¾ W.	.12	100
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 18 W.	.38	....	...	200
4. Lat. 56° to 58° S., long. 83° to 89° W.	Winter	10	19	0	0	0	3	0	3	1	1	3	12	10	33	11	21	2	N. 46 53 W.	.65	....	...	43
5. Lat. 56° to 58° S., long. 81° to 89° W.	Spring	8	20	0	6	4	4	3	0	4	19	3	13	6	23	12	42	3	N. 42 50 W.	.43	....	...	56
	Autumn	3	8	0	8	0	1	2	2	2	1	4	5	17	30	16	24	0	N. 46 21 W.	.56	....	...	41
6. Lat. 56° to 58° S., long. 79° to 89° W.	Summer	0	18	3	10	4	19	3	11	5	2	0	11	2	7	7	14	4	N. 52 11 E.	.18	S. 70 E.	.42	40
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 45 37 W.	.36	....	...	420
7. Lat. 55° to 60° S., long. 80° to 85° W.	Spring	24	21	7	19	2	4	7	10	16	32	15	32	18	57	40	54	4	N. 57 41 W.	.37	S. 87½ E.	.08	121
	Summer	0	7	1	0	5	6	4	4	5	5	6	18	7	11	16	18	11	N. 76 16 W.	.33	S. 30¼ E.	.14	41
	Autumn	8	8	3	6	0	2	5	14	9	18	4	14	27	55	29	65	1	N. 60 30 W.	.53	N. 50¼ W.	.09	89
	Winter	36	37	13	20	0	6	3	19	7	26	26	62	47	128	84	63	13	N. 60 16 W.	.55	N. 50½ W.	.11	197
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 62 51 W.	.44	....	...	448
8. Lat. 56° to 58° S., long. 81° to 83° W.	Winter	20	25	4	8	0	0	0	1	0	8	3	12	18	37	8	27	2	N. 41 47 W.	.59	....	...	56
9. Lat. 58° to 60° S., long. 77° to 89° W.	Spring	17	10	1	9	3	2	3	1	0	1	2	9	9	30	14	33	1	N. 34 6 W.	.60	....	...	48
10. Lat. 58° to 60° S., long. 77° to 85° W.	Autumn	7	8	0	1	0	0	3	4	1	3	1	4	8	23	26	26	2	N. 45 11 W.	.68	....	...	39
	Winter	11	8	5	8	1	1	0	4	0	5	5	4	15	22	19	38	2	N. 38 53 W.	.59	....	...	49
11. Lat. 58° to 59° S., long. 73° to 87° W.	Summer	3	7	8	19	3	3	0	3	0	0	5	10	3	8		4	8	N. 2 25 W.	.32	....	...	34
12. Lat. 56° to 58° S., long. 79° to 81° W.	Spring	5	9	1	13	1	5	3	11	6	24	9	20	5	31	25	15	6	N. 84 2 W.	.35	....	...	63
	Autumn	6	4	0	5	0	0	2	6	0	5	0	16	7	23	9	22	2	N. 59 31 W.	.54	....	...	36
	Winter	9	11	3	19	1	4	2	8	1	11	17	15	21	48	23	57	5	N. 55 40 W.	.48	....	...	85
13. Lat. 56° to 58° S., long. 77° to 79° W.	Spring	15	14	0	6	2	10	7	15	6	13	4	15	13	36	28	29	1	N. 57 54 W.	.36	....	...	71
	Autumn	3	20	1	8	4	3	0	3	0	9	10	13	38	48	27	28	6	N. 58 10 W.	.55	....	...	74
	Winter	7	11	11	8	2	8	6	3	2	17	9	47	26	67	63	72	7	N. 49 4 W.	.54	....	...	122

[1] Computed from the resultants for the seasons.

(Nos. 14 to 26.)

Antarctic Ocean.—*Continued.*

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass. North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Force.	Number of days.
14. Lat. 56° to 58° S., long. 75° to 79° W.	Summer	9	24	13	18	6	22	4	9	14	29	13	30	2	21	7	22	5	S. 88° 16′ W.	.06	S. 57½° E.	.33	83
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 63 1 W.	.37	....	...	666
15. Lat. 56° to 58° S., long. 75° to 77° W.	Spring	9	15	3	13	3	13	5	10	6	23	19	34	20	54	27	47	8	N. 73 14 W.	.47	....	...	103
	Autumn	5	10	1	10	1	8	4	11	7	15	12	31	20	44	22	31	2	N. 77 30 W.	.45	....	...	78
	Winter	14	25	2	10	13	4	1	5	5	12	20	44	29	104	26	74	19	N. 59 3 W.	.55	....	...	136
16. Lat. 58° to 60° S., long. 75° to 77° W.	Winter	11	2	8	0	0	0	0	3	0	5	2	7	8	26	21	41	3	N. 42 55 W.	.69	....	...	15
17. Lat. 58° to 60° S., long. 73° to 77° W.	Spring	10	22	12	0	7	3	4	3	0	0	7	19	9	36	26	46	0	N. 36 9 W.	.58	....	...	23
	Autumn	31	10	15	0	0	3	1	0	2	7	0	16	9	56	31	56	3	N. 38 40 W.	.69	....	...	27
18. Lat. 58° to 60° S., long. 73° to 75° W.	Winter	11	17	1	0	1	7	1	1	0	5	4	10	15	48	38	43	5	N. 46 11 W.	.67	....	...	23
19. Lat. 56° to 58° S., long. 73° to 75° W.	Spring	3	17	7	7	2	11	5	5	16	25	13	35	18	41	22	39	3	N. 79 9 W.	.39	S. 71 E.	.07	30
	Summer	3	7	0	2	2	6	2	9	0	8	7	18	1	20	6	14	0	N. 84 6 W.	.35	S. 58 E.	.12	12
	Autumn	4	12	0	4	0	6	1	10	8	23	5	32	27	68	25	29	5	N. 78 9 W.	.56	N. 81½ W.	.10	29
	Winter	15	24	0	9	3	13	2	9	8	16	25	67	63	87	30	78	11	N. 72 12 W.	.56	N. 48 W.	.11	51
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 77 42 W.	.46	....	...	121
20. Lat. 56° to 58° S., long. 71° to 73° W.	Spring	19	19	4	19	6	18	5	16	10	11	10	33	26	53	20	49	8	N 55 39 W.	.33	N. 55 E.	.08	36
	Summer	6	5	5	13	3	14	0	3	5	10	9	11	9	16	5	10	1	N. 73 27 W.	.14	....	...	14
	Autumn	16	22	2	2	8	8	4	4	4	13	8	51	30	37	23	34	4	N. 67 32 W.	.48	N. 63 W.	.11	30
	Winter	21	26	5	14	12	6	4	15	9	22	28	96	59	133	38	48	18	N. 76 17 W.	.54	S. 88½ W.	.18	62
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 68 36 W.	.37	....	...	142
21. Lat. 58° to 60° S., long. 71° to 73° W.	Spring	8	8	0	3	1	1	0	1	1	12	1	20	12	27	13	29	5	N. 60 35 W.	.59	....	...	47
	Autumn	9	12	1	6	0	2	0	1	0	6	0	3	14	38	44	31	6	N. 43 22 W.	.71	....	...	58
	Winter	13	6	1	4	4	2	1	6	0	8	2	27	15	56	50	38	8	N. 58 28 W.	.71	....	...	80
22. Lat. 58° to 60° S., long. 69° to 71° W.	Spring	6	13	4	1	0	2	0	0	3	3	0	9	9	36	7	23	4	N. 46 59 W.	.63	....	...	40
	Autumn	12	9	2	4	3	4	0	5	0	4	4	18	8	58	41	37	9	N. 51 16 W.	.65	....	...	72
	Winter	11	19	3	6	0	0	0	1	0	11	9	19	30	44	50	57	6	N. 51 11 W.	.68	....	...	89
23. Lat. 55° to 60° S., long. 65° to 70° W.	Spring	14	31	12	22	1	7	4	7	10	37	34	95	39	80	42	66	16	N. 75 2 W.	.48	S. 16½ E.	.05	172
	Summer	12	11	5	14	5	6	4	12	6	13	14	43	21	44	16	34	4	N. 73 33 W.	.40	S. 62¼ E.	.12	88
	Autumn	35	32	14	10	3	4	5	12	5	22	26	136	103	155	82	88	24	N. 69 33 W.	.63	N. 68 W.	.12	252
	Winter	37	67	20	39	9	17	1	10	15	42	33	149	107	221	133	108	36	N. 63 46 W.	.56	N. 7¼ W.	.08	348
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 70 3 W.	.51	....	...	860
24. Lat. 56° to 58° S., long. 69° to 71° W.	Spring	13	19	10	5	10	5	3	10	6	13	14	29	34	52	23	65	6	N. 56 20 W.	.48	N. 28¼ W.	.04	106
	Summer	0	3	0	3	0	0	0	0	1	0	5	0	0	15	9	19	0	N. 32 28 W.	.33	N. 78 E.	.21	36
	Autumn	15	7	8	16	9	1	6	7	1	22	14	25	31	56	45	31	5	N. 63 41 W.	.48	S. 64 W.	.05	100
	Winter	17	23	10	14	6	1	1	6	8	25	22	74	76	100	51	63	23	N. 70 16 W.	.58	N. 66¼ W.	.13	173
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 58 29 W.	.45	....	...	415
25. Lat. 56° to 58° S., long. 67° to 69° W.	Spring	11	34	8	28	1	11	2	11	19	15	16	64	40	53	41	46	12	N. 66 25 W.	.40	N. 72¾ E.	.09	137
	Summer	11	3	6	15	3	12	4	3	0	8	15	34	23	31	18	16	5	N. 68 33 W.	.37	S. 48¾ E.	.09	69
	Autumn	20	30	6	8	1	5	4	13	6	12	19	44	44	85	30	49	5	N. 64 2 W.	.54	N. 59¼ W.	.08	127
	Winter	15	51	19	34	11	19	1	16	7	29	17	121	81	166	60	78	18	N. 61 35 W.	.52	N. 39 W.	.07	248
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 64 48 W.	.46	....	...	581
26. Lat. 58° to 60° S., long. 67° to 69° W.	Autumn	7	7	0	2	0	0	0	5	0	8	0	21	22	61	30	38	5	N. 60 25 W.	.73	....	...	69
	Winter	7	11	2	13	3	3	0	1	1	5	1	28	39	75	27	30	4	N. 61 24 W.	.66	....	...	83

[1] Computed from the resultants for the seasons.

(No. 27.) **Orange Bay and vicinity, Terra del Fuego.**

Computed from observations made hourly, under the direction of Commodore Wilkes, from February 18th, to April 20th, 1839, together with those for three days, collected and classified at the United States Naval Observatory, as follows:—

Spring.—North 46, N. E. 61, East 9, S. E. 21, South 17, S. W. 678, West 120, N. W. 84, N. N. W. 12; calm 194.

Direction of resultant S. 59° 29′ W.?

Ratio of resultant to sum of winds .56.

Number of days 54.

Winter.—North 9, N. E. 16, East 10, S. W. 156, West 7, N. W. 11; calm 55.

Direction of resultant S. 51° 36′ W.??

Ratio of resultant to sum of winds .50.

Number of days 11.

(No. 28.) **Saint Martin's Cove and vicinity, Terra del Fuego.**

Computed from observations collected and classified at the United States Naval Observatory, for an aggregate period of 36 days, combined with those made by Charles Darwin, for 7 days, in the winter of 1832, and those made by Sir James Ross, for 71 days, in the autumns of 1842 and 1843, as follows:—

Autumn.—North 3, N. E. 3, E. N. E. 8, East 2, S. E. 1, South 2, S. S. W. 9, S. W. 69, W. S. W. 11, West 18, W. N. W. 8, N. W. 11, N. N. W. 10; calm 12.

Direction of resultant S. 67° 41′ W.?

Ratio of resultant to sum of winds .57.

Number of days 95.

Winter.—N. N. E. 1, N. E. 2, South 4, S. S. W. 3, S. W. 2, W. S. W. 4, West 2, W. N. W. 3, N. W. 1.

Direction of resultant S. 60° 59′ W.?

Ratio of resultant to sum of winds .52.

Number of days 19.

(Nos. 29 to 46.) **Antarctic Ocean,** longitude 73° west, eastwardly to 180°.

From observations for an aggregate period of over 5 years, collected and classified, from the logs of numerous sailing vessels, at the United States Naval Observatory, under the direction of Capt. M. F. Maury, Superintendent.

Place of observation.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.																	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.			Direction.	Force.	
29. Lat. 58° to 60° S., long. 61° to 73° W.	Summer	15	15	9	15	3	7	1	5	2	6	4	22	8	15	14	41	2	N. 27° 15′ W.	.41	....	...	61
30. Lat. 56° to 58° S., long. 65° to 67° W.	Spring	13	46	4	12	3	8	1	4	9	44	28	119	62	69	51	51	14	N. 84 12 W.	.54	S. 24° W.	.10	179
	Summer	7	7	0	8	0	5	6	5	8	20	13	25	14	36	10	19	1	N. 89 14 W.	.44	S. 22½ E.	.15	61
	Autumn	15	31	13	17	1	6	2	4	2	13	11	50	41	93	49	59	11	N. 55 25 W.	.57	N. 9½ E.	.18	139
	Winter	20	53	13	21	4	3	4	6	8	35	40	117	93	172	48	68	28	N. 72 34 W.	.57	N. 66½ W.	.05	244
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 73 19 W.	.52	....	...	623
31. Lat. 56° to 58° S., long. 63° to 65° W.	Spring	5	18	7	8	2	5	3	11	5	22	22	66	31	56	22	43	14	N. 81 11 W.	.50	S. 54 E.	.02	113
	Summer	12	8	1	1	3	8	3	9	7	21	12	29	20	14	7	23	2	S. 82 12 W.	.40	S. 73 E.	.12	60
	Autumn	11	9	2	1	1	2	0	4	1	10	11	53	38	69	19	35	11	N. 74 14 W.	.67	N. 54 W.	.16	92
	Winter	26	27	10	20	4	5	1	3	4	25	20	87	74	101	19	40	24	N. 73 35 W.	.54	N. 4 W.	.07	163
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 80 7 W.	.52	....	...	428
32. Lat. 56° to 58° S., long. 61° to 63° W.	Winter	3	14	5	7	1	1	2	5	0	7	20	44	25	36	16	11	6	N. 83 2 W.	.55	....	...	71

[1] Computed from the resultants for the seasons.

(Nos. 33 to 46.) **Antarctic Ocean.**—*Continued.*

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
33. Lat. 58° to 60° S., long. 61° to 67° W.	Autumn	4	0	0	0	0	0	0	0	0	4	10	19	21	40	19	14	1	N. 74° 58′ W.	.81	....	...	44
34. Lat. 58° to 60° S., long. 59° to 69° W.	Spring	9	19	4	5	1	4	0	1	0	9	8	38	24	48	14	28	4	N. 64 20 W.	.58	....	...	72
35. Lat. 58° to 60° S., long. 59° to 67° W.	Winter	9	3	2	0	0	1	0	0	2	1	2	41	48	63	9	25	8	N. 73 41 W.	.77	....	...	102
36. Lat. 55° to 60° S., long. 60° to 65° W.	Spring	10	21	3	8	0	2	2	7	3	19	33	83	33	60	28	59	10	N. 77 29 W.	.58	N. 64° W.	.08	127
	Summer	6	13	0	0	4	2	1	8	6	12	12	33	12	10	3	40	2	N. 78 29 W.	.42	S. 82½ E.	.09	55
	Autumn	22	21	4	8	2	2	1	5	11	34	21	70	41	69	25	36	14	N. 80 26 W.	.54	S. 79 W.	.04	129
	Winter	22	45	14	23	9	16	3	15	10	37	45	105	58	89	50	72	21	N. 75 17 W.	.43	N. 80 E.	.10	211
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	N. 78 1 W.	.51	....	...	522
37. Lat. 56° to 58° S., long. 55° to 63° W.	Spring	5	22	1	5	0	1	0	10	4	14	6	28	22	16	9	28	7	N. 70 42 W.	.42	N. 74 E.	.06	59
	Summer	8	14	6	1	3	5	0	3	5	12	9	91	9	5	5	6	1	S. 86 28 W.	.32	S. 43¼ E.	.19	41
	Autumn	11	7	1	5	0	2	1	1	0	11	9	30	13	31	16	14	3	N. 73 18 W.	.57	N. 64 W.	.10	52
	The year[1]	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 75 0 W.	.47	....	...	254
38. Lat. 56° to 58° S., long. 55° to 61° W.	Winter	4	7	0	4	1	1	0	0	0	1	2	14	17	12	13	14	2	N. 58 1 W.	.63	....	...	31
39. Lat. 55° to 60° S., long. 50° to 60° W.	Spring	0	3	0	0	0	0	0	0	2	0	1	7	8	6	10	8	3	N. 63 2 W.	.70	....	...	16
	Summer	0	3	1	0	3	1	2	3	0	5	0	3	0	4	0	2	0	S. 13 12 W.	.13	....	...	9
	Autumn	9	4	5	3	0	0	0	0	0	5	5	2	2	2	9	2	0	N. 31 5 W.	.42	....	...	16
	Winter	8	7	3	3	0	0	0	0	0	5	3	23	10	12	8	12	1	N. 64 25 W.	.57	N. 74 W.	.08½	32
	The year[1]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 60 7 W.	.39	....	...	73
40. Long. 4° to 10° W.	Spring	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	0	1	N. 57 32 W.	.08	....	...	5
41. Long. 30° W. to 6° E.	Winter	4	1	0	0	0	0	0	0	3	0	3	1	1	1	0	0	3	S. 87 31 W.	.27	....	...	17
42. Long. 10° to 32° E.	Winter	1	0	1	0	2	0	0	0	1	1	1	0	1	0	1	0	1	S. 79 6 W.	.11	....	...	10
43. Long. 49° to 52° E.	Winter	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	South.	.25	....	...	4
44. Long. 74° to 110° E.	Winter	43	2	5	10	24	24	0	0	48	0	48	0	31	17	10	2	0	S. 42 50 W.	.11	....	...	11
45. Long. 120° to 152° E.	Spring	0	0	1	0	1	0	0	1	2	1	1	0	2	1	0	0	1	S. 29 2 W.	.36	....	...	11
46. Long. 160° E. to 180°.	Winter	5	10	10	0	0	0	10	0	0	0	28	21	34	0	10	0	0	S. 84 1 W.	.49	....	...	10

[1] Computed from the resultants for the seasons.

ZONE No. 31.

LATITUDE 60° TO 65° SOUTH.

The data for the study of the winds of this zone consist of observations made on the Antarctic Ocean for an aggregate period of 505 days.

(Nos. 1 to 12.) **Antarctic Ocean.**

Observed for an aggregate period of 505 days, as described in the following table and notes appended :—

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South.	S. S. W.	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or variable.	Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences. Direction.	Monsoon influences. Force.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																					
1. Lat. 60° to 65° S., long. 150° to 175° W.	Winter[1]	3	0	1	1	0	0	0	0	0	0	1	0	3	0	0	0	0	N. 31° 36′ W.	.44	....	...	9
2. Lat. 62° to 65° S., long. 133° to 135° W.	Winter[1]	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	S. 45 0 E.	.71	....	...	2
3. Lat. 60° to 64° S., long. 84° to 117° W.	Winter[1]	4	0	0	0	0	0	0	0	3	0	0	0	5	0	0	0	3	N. 78 41 W.	.34	....	...	15
4. Lat. 60° to 62° S., long. 63° to 83° W.	Spring[2]	2	1	2	11	0	0	0	0	0	1	2	6	4	18	3	22	0	N. 38 24 W.	.59	S. 66¾° W.	.11	72
	Summer[2]	2	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	N. 38 47 E.	.82	N. 80 E.	.78	9
	Autumn[2]	3	0	0	0	2	0	0	0	0	0	3	4	2	14	8	8	0	N. 56 35 W.	.75	S. 75 W.	.34	44
	Winter[2]	2	2	0	0	3	0	0	0	0	0	1	0	9	14	11	12	1	N. 48 3 W.	.76	N. 89¼ W.	.31	55
	The year[2]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	N. 27 31 W.	.57	....	...	180
5. Lat. 60° to 65° S., long. 5° to 50° W.	Winter[3]	10	4	12	4	17	2	12	8	15	10	17	0	4	6	6	1	6	S. 33 19 E.	.19½	....	...	67
6. Lat. 60° to 65° S., long. 11° to 14° W.	Spring[3]	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	S. 11 3 W.	.86	....	...	2
7. Lat. 60° to 61° S., long. 12° to 14° E.	Winter[4]	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	S. 22 30 E.	.92	....	...	2
8. Lat. 60° to 65° S., long. 28° to 47° E.	Winter[4]	1	0	0	0	1	0	0	0	4	0	0	0	1	0	1	0	0	S. 17 13 W.	.30	....	...	8
9. Lat. 60° to 61° S., long. 107° to 118° E.	Spring[4]	0	0	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	N. 22 30 W.	.15½	....	...	4
10. Lat. 60° to 65° S., long. 95° to 115° E.	Winter[5]	0	0	0	0	48	1	22	40	59	22	13	15	41	23	24	0	4	S. 9 53 W.	.39½	....	...	13
11. Lat. 60° to 65° S., long. 130° to 135° E.	Winter[6]	0	0	0	0	33	20	19	14	15	0	1	5	2	5	4	0	2	S. 49 49 E.	.61	....	...	5
12. Lat. 60° to 65° S., long. 160° to 176° E.	Winter[7]	10	0	0	10	20	10	30	0	0	0	29	6	69	12	32	36	0	N. 72 17 W.	.33	....	...	18

[1] Computed from observations made by Captain Cook, in the winter of 1773–4.
[2] Computed from observations collected and classified at the United States Naval Observatory, under direction of Captain M. F. Maury.
[3] Computed from observations made by Sir James Ross, in the winter and spring of 1842–3.
[4] Computed from observations made by Captain Cook, in the year 1773.
[5] Computed from observations made by Captain Cook, for 5 days, in 1773, together with those made hourly, under the direction of Commodore Wilkes, for 8 days, in February, 1840.
[6] Computed from hourly observations made under the direction of Commodore Wilkes, for 5 days, in February, 1840.
[7] Computed from observations made by Sir James Ross, for 12 days, in 1842 or 1843, combined with those made hourly by Commodore Wilkes, for 6 days, in 1839 or 1840.

ZONE No. 32.

Latitude 65° to 70° South.

The material for this zone is derived from the observations of the Antarctic explorers, Cook, James Ross and Wilkes, for an aggregate period of 104 days.

(Nos. 1 to 6.) **Antarctic Ocean.**

Place of observation.	Time of the year.	North.	N. N. E.	N. E.	E. N. E.	East.	E. S. E.	S. E.	S. S. E.	South	S. S. W	S. W.	W. S. W.	West.	W. N. W.	N. W.	N. N. W.	Calm or var.	Direction of resultant.	Ratio of resultant to sum of winds.	Number of days.
		Relative Prevalence of Winds from the Different Points of the Compass.																			
1. Lat. 65° to 70° S., long. 135° to 150° W.	Winter[1]	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	N. 15° 6′ E.???	.84	5
2. Lat. 65 to 70 S., long. 100 to 110 W.	Winter[1]	1	0	3	1	2	0	0	2	0	0	0	0	0	0	0	0	0	N. 72 4 E.???	.76	9
3. Lat. 65 to 70 S., long. 8 to 20 W.	Spring[2]	1	0	0	0	4	0	2	2	2	1	0	0	0	0	2	0	0	S. 57 47 E.???	.37	7
4. Lat. 67 15′ S., long. 39 35′ E.	Winter[3]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	S. 78 45 E.???	1.00	1
5. Lat. 65 to 67 S., long. 105 to 160 E.	Winter[4]	8	0	7	7	25	69	89	26	68	24	63	43	54	7	11	10	17	S. 5 45 E.?	.41	22
6. Lat. 65 to 70 S., long. 166 to 176 E.	Winter[5]	10	3	10	5	6	13	7	4	13	2	12	9	9	3	8	4	2	S. 5 37 E.	.07	60

[1] Computed from observations made by Captain Cook, in the year 1770.
[2] Computed from observations made by Sir James Ross, in the year 1842.
[3] Captain Cook was at this point January 17th, 1773, and found the wind E. S. E.
[4] Computed from observations made under the direction of Commodore Wilkes, along the coast of the Antarctic Continent, in the year 1840.
[5] Computed from observations made by Sir James Ross, in the winter of 1842–3.

ZONE No. 33.

LATITUDE 70° TO 75° SOUTH.

The material for the study of the winds of this zone is derived from the observations of the Antarctic explorers, Captain Cook and Sir James Ross, for an aggregate period of 41 days.

(No. 1.) **Antarctic Ocean,** longitude 106° to 108° west.

Computed from observations made by Captain Cook, for two days, in the winter of 1773–4, as follows :—

North 1, East 1.

Direction of resultant N. 45° E.???

Ratio of resultant to sum of winds .71.

(No. 2.) **Antarctic Ocean,** longitude 15° to 18° west.

Computed from observations made by Sir James Ross, for four days, in the spring of 1841, as follows :—

N. E. 3, East 1.

Direction of resultant N. 55° 48′ E.???

Ratio of resultant to sum of winds .94.

(No. 3.) **Antarctic Ocean,** longitude 166° to 176° east.

Computed from observations made by Sir James Ross, for 35 days, in the winter of 1840–41, as follows :—

North 3, N. E. 4, E. N. E. 2, East 9, E. S. E. 4, S. E. 14, S. S. E. 4, South 4, S. S. W. 1, S. W. 4, W. S. W. 6, West 4, W. N. W. 2, N. W. 2, N. N. W. 1; calm 4

Direction of resultant S. 38° 42′ E.?

Ratio of resultant to sum of winds .29.

ZONE No. 34.

LATITUDE 75° TO 80° SOUTH.

Sir James Ross appears to be the only explorer who ever penetrated this zone, and the material for the study of its winds is therefore confined to his observations, which were made for a period of 34 days, in the winter of 1840–1, between the meridians of longitude 166° and 168° east from Greenwich, as follows :—

North 2, N. N. E. 6, N. E. 9, E. N. E. 2, East 13, E. S. E. 4, S. E. 6, S. S. E. 4, South 3, S. S. W. 2, S. W. 6, W. S. W. 2, West 1, N. W. 6; calm 2.

Direction of resultant N. 88° 41′ E.

Ratio of resultant to sum of winds .31.

ZONES Nos. 35 and 36.

LATITUDE 80° TO 90° SOUTH.

These zones have never been visited by man, and the character of the winds that blow over them is very much a matter of conjecture. From the analogy of the northern hemisphere, as well as from theory, we may suppose that they blow from some southerly point, and become more easterly as they advance. And this view is confirmed by the fact shown above that every computed resultant south of latitude 65° is easterly.

ADDENDUM.

ZONE 7.—(No. 9(*a*).) **Alaska.***

Island of Saint Paul, Aleutian Islands, lat. 57° 2′ N. and long. 170° W. Observed by C. P. Fish, six times a day, from August 18, 1872, to May 31, 1873, and contained in the Annual Report of the Chief Signal Officer, U. S. A., for 1873.

Kind of observations.	Time of the year.	Relative Prevalence of Winds from the Different Points of the Compass.									Direction of resultant.	Ratio of resultant to sum of winds.	Monsoon influences.		Number of days.
		North.	N. E. or between N. & E.	East.	S. E. or between S. & E.	South.	S. W. or between S. & W.	West.	N. W. or between N. & W.	Calm or variable.			Direction.	Force.	
Surface winds.	Spring	229	45	68	39	27	38	32	71	3	N. 4° 35′ E.	.42	......	...	92
	Summer	19	5	6	2	5	20	21	5	1	N. 78 46 W.	.34	......	...	13
	Autumn	121	57	40	68	84	55	40	71	10	N. 1 0 W.	.07½	......	...	91
	Winter	118	77	155	44	35	53	22	15	21	N. 65 1 E.	.35	......	...	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 1 28 E.	.17½	......	...	286
Motion of clouds.	Spring	149	17	13	12	10	21	25	70	74	N. 17 30 W.	.47½	N. 6° E.	.24	92
	Summer	8	0	1	3	1	8	3	5	4	N. 73 5 W.	.28	S. 38 W.	.16	13
	Autumn	91	26	8	17	40	47	50	50	27	N. 53 26 W.	.28	S. 49 W.	.08	91
	Winter	71	26	65	5	33	52	20	62	45	N. 12 52 W.	.16	S. 65 E.	.15	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 38 16 W.	.27½	......	...	286
Two preceding combined.	Spring	378	62	81	51	37	59	57	141	76	N. 5 16 W.	.43½	N. 6 E.	.25	92
	Summer	27	5	7	5	6	28	24	10	5	N. 77 18 W.	.32	S. 27 W.	.27	13
	Autumn	212	83	48	85	124	102	90	121	37	N. 38 58 W.	.14	S. 16 W.	.08	91
	Winter	189	103	220	49	68	105	42	77	66	N. 48 22 E.	.23	S. 81 E.	.24	90
	The year[1]	...	...	...	...	...	...	...	...	...	N. 19 37 W.	.20	......	...	286

[1] Computed from the resultants for the seasons.

* This addendum to page 111 was obtained too late for insertion in its proper place.

WINDS OF THE GLOBE.

SERIES C. VELOCITY TABLES AND DEFLECTING FORCES.

VELOCITY TABLES.

THESE tables, and the accompanying Plates 13 and 25, are designed to elucidate the last of the series of questions proposed at the outset of this discussion, and to show the effect of combining the element of force or *velocity*, with that of *time*, in computing the mean direction of the wind. The question itself is a highly important one, for since the real point that we wish to arrive at is the mean direction and amount of the actual motion, or transfer, of the air that passes over any given place, it is obvious that if there is a difference in the velocity of winds from the different points of the compass, or over different sections of country, such as to materially affect the results that would be obtained if it were always and everywhere the same, all the computations in the foregoing pages must require correction, if they be not rendered in great measure worthless; for (where not expressly stated to the contrary) they were all made on the assumption that the velocity was uniform; or, which is the same thing, without any reference to the velocity. And, not only so, but nearly all the observations that have ever been taken, both by land and sea, must be thrown aside (for in very few of them has the velocity of the wind been attempted to be recorded), and the whole work of observation must be commenced anew.

This question can be determined only by observation and experiment. We can know nothing about it *à priori*. Difference of velocity may produce a very great effect upon the mean direction, or very little, or none all. The solution of this question must therefore be viewed as vital to the search for the laws of atmospheric circulation.

The accompanying tables, collected from Series B of this work, are designed to give a synoptical view of the elements on which a determination may be based, as derived from observations taken mainly in the United States by the observers that reported to the Smithsonian Institution, in the years 1854, 1855, 1856 and 1857. The laborious work required to obtain the results here presented, was performed, under the direction of the author, by his brother, Robert A. Coffin, A.M., of Conway, Massachusetts, and other assistants, the cost being defrayed by the

Smithsonian Institution.[1] Few of the observers possessing anemometers, the velocities were usually estimated in force numbers, which were reduced to miles per hour on the following scale:—

1.	Very light breeze	2 miles per hour
2.	Gentle breeze	4 " " "
3.	Fresh breeze	12 " " "
4.	Strong wind	25 " " "
5.	High wind	35 " " "
6.	Gale	45 " " "
7.	Strong gale	60 " " "
8.	Violent gale	75 " " "
9.	Hurricane	90 " " "
10.	Most violent hurricane	100 " " "

[1] [From a monograph found among my father's unpublished writings, I extract the following statement in reference to these Velocity Tables, which were then incomplete, being in course of computation.—SELDEN J. COFFIN.]

"In the Winds of the Northern Hemisphere, 1853, this question was discussed, so far as the comparatively meagre data then at my command allowed, and the conclusion arrived at was, that, as a general thing, this difference of velocity, while it increases the *magnitude* of the resultant, does not appreciably affect its *direction*. The data on this continent from which I reached the above conclusion, consisted of observations taken at 103 different places, for an aggregate period of 397 months, or about 33 years, more than half of them being from Eastern and Middle States, and only an aggregate of about two years from States and Territories west of Ohio.

"In 1857, the Secretary of the Smithsonian Institution ordered a thorough and exhaustive discussion of the subject, based on the observations reported to the Institution for the years 1854–7, from 418 different places on this continent, for an aggregate period of 8589 months, or over 700 years, in which each observer noted the direction of the wind, usually three times a day, and affixed to each record a number from 0 to 10 to represent the velocity, according to the scale given above, based on the experiments of Rouse and Smeaton.

"The method of discussion was, first to group the places of observation into districts of moderate geographical extent, then to compute, for each district, the mean velocity of the winds, as estimated by the observers, both the lower current and that indicated by the motion of the clouds, for each of the eight principal points of the compass, for each season of the year, and for the whole year, counting all winds between the N. and E. points as northeast, those between S. and E. as southeast, etc., and finally to compute the resultant motion of each of the two currents, over each district, for each season of the year and the whole year, first from the actual motion estimated as above, and then, for the purpose of comparison, on the supposition that the winds from all directions moved with the same mean velocity. To carry out this plan required great labor, inasmuch as beside classifying the winds according to the points of the compass from which they came, the record of the estimated velocity at each separate observation, amounting in the aggregate to over three-fourths of a million, had to be translated into linear distance, or miles per hour. An aggregate of over 5 years of working time has been spent upon it. The work of classification was performed chiefly by ladies; that of translating into miles, which required only care and accuracy in applying the scale and summing up the results, by men competent for such work; while the trigonometrical resultants were mostly computed by Robert A. Coffin.

"The results corroborate the views advanced in The Winds of the Northern Hemisphere in regard to the magnitude of the resultants, but not in regard to their direction, both of which facts will appear from the following general statements, in which it will be seen that the effect of difference in velocity is to throw the resultant northerly far more frequently than southerly, and at a much greater angle; that it increases its magnitude far more frequently than it diminishes it, and by a greater amount.

"In 10 districts north of the 45th parallel of latitude it is thrown northerly; in 9 at an average

Column I contains the name of the place of observation, to which is prefixed the zone and serial number, by reference to which on the preceding pages the reader can find the average velocity of the wind from each point of the compass for each of the seasons. See, for example, Red River Settlement; near the foot of page 148 we find, "Mean velocity in miles per hour, Spring, North 5.32, N. E. 2.71," etc. The places are also grouped—not as by the author, in strict sequence of latitude and longitude—but to conform as nearly as practicable to the divisions of the United States made in the "Discussion and Analysis of Winds."

Column II was computed as in all the tables of Series B, by having regard only to the number of observations, without any reference to velocity.

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angle of 17° 32′; and southerly in one at an angle of 8° 38′, making the average of the whole northerly by 15° 13′; while it increases the magnitude of the resultant in 5 of the districts by an average of 50 per cent., and diminishes it in 5 by an average of 15 per cent., making for the whole an average increase of 18 per cent.

"In 44 districts between the 40th and 45th parallels (exclusive of Great Salt Lake City where the results are too anomalous to be incorporated with the others), the resultant is thrown northerly in 36 at an average angle of 15° 49′, and southerly in 8 at an average angle of 4° 31′, making the average for the whole northerly by 12° 8′. The influence on the direction seems generally to be much greater in the western than in the eastern States of this belt, and this accounts for my failure to detect it when I prepared my former publication. The *magnitude* of the resultant is increased in 36 by an average of 29 per cent., and diminished in 8 by an average of 14 per cent., making for the whole an average increase of 21 per cent. In 20 districts between the parallels of 36½° and 40° the resultant is thrown northerly in 17 at an average angle of 16° 36′, and southerly in 3 at an average angle of 4° 11′, making the average for the whole northerly by 13° 29′, while its magnitude is increased in 19 districts by an average of 43 per cent., and diminished in but one, and that only by 11 per cent., making for the whole an average increase of 36 per cent.

"The near coincidence of the results in these three belts authorizes us to combine them, and we thus find that the mean influence from the parallel of 50° down to that of 36½° is to render the resultant more northerly by about 13°, and to increase its magnitude about 25 per cent. This difference is not great, but may affect the general principle.

"Through the States of Tennessee and North Carolina, from latitude 35° to 36½°, the resultant is thrown northerly in 4 districts at an average angle of 18° 5′, and southerly in one at an angle of 33° 57′, the average for the whole being 7° 41′ northerly. Most of the observations in the latter district were taken at Knoxville, Tenn., where there may be some local cause that renders the south and southwest winds so much stronger than those from the north and northwest. In each of the 5 districts the magnitude of the resultant is increased, the average increase for the whole being 40 per cent. Notice the accumulating increase of the magnitude of the resultants as we pass southerly through the 4 belts above described, viz., 18, 21, 36 and 40.

"The results in the next belt extending from latitude 30° to 35° seem perfectly chaotic. In 7 out of 16 districts the resultants are thrown northerly at angles ranging from 1° to 126°, and in 9 southerly with nearly as wide a range, the average for the whole being 3° 23′ northerly. The magnitude of the resultants is increased in 7 districts and diminished in 9, the average being an increase of 2½ per cent. It is within this belt that the system of westerly winds breaks up and is replaced, as we go south, by the trade wind system, and the slight degree of prevalence of the wind in any direction allows it to be controlled very much by local influences.

"Still further south out of 6 districts represented, at 5 the resultant is thrown northerly at an average angle of 17° 48′. The remaining district is represented by the City of Mexico, where the general results are in some degree anomalous, and make a longer period of observation desirable In 5 of these districts the magnitude of the resultant is increased by an average of 25 per cent., while in one it is diminished by 8 per cent. The average increase for the whole being 19½ per cent."

Column III is the laborious product obtained by computing the resultants from the number of miles travelled by the winds from each point of the compass for each season. As, for example, Red River Settlement, page 148, "Number of miles, Spring, North, 383, N. E. 38," etc. It therefore represents time multiplied by velocity.

The remaining columns IV, V, VI and VII, are taken from the sub-tables. (See, for instance, foot-note 2 on page 148.) Column IV containing the average velocity of all winds in miles per hour, though derived from the same source as the "Mean Velocity" for the separate points of the compass, is, of course, not the arithmetical average of the latter, but was separately computed. The numbers in column V show the velocity in miles per hour in the mean direction, on the supposition that the winds from every point of the compass move with the average velocity given in column IV. These figures are obtained by multiplying the numbers in column IV by the ratios in column II. Column VI exhibits the true velocity in the mean direction, giving to the winds from the several points of the compass each their own average velocity. The results are the product of the miles per hour in column IV multiplied by the corresponding ratios in column III. Column VII represents the excess of the velocities in column VI over those in column V, as expressed by the use of the plus sign, the minus sign being employed when the figures in column V are the greater. The "Mean Resultants" for the groups of stations in columns II and III were obtained mechanically by the use of a drafting instrument, and are given to the nearest whole degree, the fractions of a degree having been excluded after the computations were made.

A DRAFT OF THESE RESULTS is found in Plate 25, where the figures in column II are drawn as arrows, flying with the wind, the length of the shaft (without the barb) being proportioned to the ratios; those in column III are similarly noted, the barb being omitted, and the greater length of the shaft conforming to the increase in the ratios over those in column II. The average velocities given in column IV are found in the vertical series in the middle of the plate, a scale of miles being attached at the left. The vertical series at the extreme right-hand of the plate contains delineations of the results in the remaining columns; column V being shown in a dotted line, column VI in a continuous line; and the intervening space, which is in most cases filled with the sign +, representing column VII. In the individual stations at the lower part of the page, the velocities were, in some cases, so great as to need changes in the scale employed, which is, therefore, recorded in the margin.

An inspection of the tables and plate shows clearly that, as a general thing, *the difference in the velocity of the winds from different points of the compass affects the resultant but slightly* either in direction or amount. In the United States, north of 32° N. latitude, the resultant had by noting the actual velocities (*i. e.*, the dotted arrow) is found inclined more to the right hand, that is, it represents a direction more northerly than the unbroken arrow that represents the effect when the velocity is disregarded. The annual resultants in the former case averaging S. 89° + W. with a ratio of .261, and in the latter S. 80° + W. .227. The divergence of these

two classes of annual resultants is therefore about nine degrees (8° 48 by one mode of reckoning and 9° 38 by another), the divergence being greatest in winter. In passing into the adjacent geographical zones, it is significant that, within the limits of the Polar and Equatorial systems of winds, the places represented on the chart with like uniformity exhibit divergence, but in the contrary direction, *i. e.*, the dotted arrow for velocity, is at the left hand of the continuous arrow for time.

The average velocity of all winds in the United States differs little from 7 miles an hour,[1] being slightly in excess in the northeastern part of the Union, and less in the States nearer the centre of the continent. The anemometer gives greater figures than those obtained by estimation. The velocity in the mean direction on the hypothesis that the winds from every point of the compass move with an average velocity (given in column IV) is 1.7 miles per hour. But the true velocity in the mean direction, when each wind is allowed its own separate velocity, is nearly 2.0 miles per hour.

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[1] In the "Winds of the Northern Hemisphere" the average hourly velocity of all winds was given as 5.8 miles; and the mean resultant obtained from the actual distances was stated to be S. 87° 44′ W 1.74 miles per hour; and that obtained by disregarding velocity S. 85° 59′ W. 1.53 miles per hour.

Zone.	Serial number.	I. Place of Observation.	II. Direction and Percent- derived from No. of					
			Spring.		Summer.		Autumn.	
8	15	1. Red River Settlement, lat. 50°, long. 97°.......	S. 36° W.	.15	S. 81° W.	.19	S. 58° W.	.26
		Pacific Coast.						
9	25	1. Astoria, Oregon (north of lat. 45°)...............	S. 78 W.	.23	S. 87 W.	.57	S. 20 W.	.18
11	21	2. San Francisco, etc., Cal., lat. 38° to 39°........	S. 56 W.	.28	S. 35 W.	.41	N. 76 W.	.13
12	11	3. San Diego, S. W. Cal., lat. 33°......................	S. 74 W.	.17	S. 40 W.	.26	S. 33 W.	.11
		Mean resultant..............................	S. 68 W.	.23	S. 59 W.	.38	S. 47 W.	.11
10	47	1. Salt Lake City, Utah, lat. 41°.....................	N. 26 W.	.44	N. 13 E.	.15	N. 12 E.	.12
		Northern Lake Region.						
9	41	1. St. Joseph, Northwestern Minnesota	N. 59 E.	.12	S. 28 W.	.30	....	...
9	43	2. Hazlewood, Western Minnesota..................	N. 77 W.	.27	S. 66 W.	.27	N. 89 W.	.32
9	46	3. Princeton, Central Minnesota......................	N. 36 W.	.18	S. 46 W.	.10	S. 56 W.	.16
9	48	4. St. Anthony, Eastern Minnesota	S. 43 W.	.15	S. 33 W.	.49	S. 67 W.	.52
9	50	5. Lake Winnibigoshish, N. and N. E. Minnesota	S. 13 E.	.05	....	...	S. 61 W.	.04
9	52	6. Bay City and Superior, Northwestern Wis.....	N. 35 E.	.34	N. 3 W.	.08	N. 88 W.	.23
9	56	7. Northern Michigan, west of long. 87°...........	N. 23 E.	.15	S. 48 W.	.13	N. 80 W.	.26
9	64	8. St. James, Northern Mich., east of long. 87°...	S. 71 W.	.18	S. 63 W.	.29	S. 80 W.	.17
10	83½	9. Southeast'n Minnesota and West'n Wisconsin	S. 19 E.	.16	....	...	N. 45 W.	.22
10	96	10. Eastern Wisconsin....................................	N. 83 W.	.18	S. 80 W.	.29	S. 76 W.	.33
10	99	11. Southeastern Wisconsin	S. 84 W.	.08	S. 23 W.	.17	S. 55 W.	.22
		Mean resultant..............................	N. 56 W.	.05	S. 50 W.	.21	S. 82 W.	.23
		Canada and Nova Scotia.						
9	66	1. Montreal and St. Martin's, Canada East.........	N. 77 W.	.20	S. 66 W.	.32	N. 89 W.	.27
9	70	2. Stanbridge, Canada East............................	S. 23 W.	.24	S. 12 E.	.31	S. 10 E.	.34
9	83	3. Wolfville, Northern Nova Scotia	N. 74 W.	.28	S. 63 W.	.26	West.	.35
9	85	4. Albion Mines, Northern Nova Scotia............	N. 86 W.	.11	....	...	....	...
10	316	5. Windsor, Southern Nova Scotia....................	N. 85 W.	.29	N. 76 W.	.21	N. 86 W.	.34
		Mean resultant..............................	S. 86 W.	.19	S. 53 W.	.21	S. 71 W.	.24
		New England States.						
9	75	1. Monson, Maine	N. 77 W.	.18	S. 63 W.	.10	N. 59 W.	.13
10	251	2. Northern Vermont......................................	S. 76 W.	.13	S. 36 W.	.34	S. 44 W.	.25
10	255	3. Southern Vermont	West.	.18	S. 26 W.	26	S. 58 W.	.20
10	259	4. Western Massachusetts	N. 59 W.	.26	S. 62 W.	.27	N. 87 W.	.25
10	266	5. Connecticut..	N. 79 W.	.21	S. 46 W.	.24	N. 81 W.	.26
10	274	6. Mt. Washington, Northern New Hampshire ...	S. 88 W.	.67	N. 66 W.	.71	N. 54 W.	.73
10	276	7. Northern New Hampshire..........................	N. 66 W.	.33	S. 89 W.	.26	N. 79 W.	.42
10	280	8. Southern New Hampshire...........................	N. 66 W.	.26	S. 65 W.	.21	N. 77 W.	.28
10	288	9. Rhode Island..	N. 70 W.	.24	S. 73 W.	.26	N. 76 W.	.36
10	295	10. Northeastern Massachusetts.......................	N. 61 W.	.29	S. 80 W.	.25	N. 83 W.	.37
10	299	11. Southeastern Massachusetts........................	N. 89 W.	.26	S. 60 W.	.35	N. 86 W.	.35
10	302	12. Cape Cod and adjacent Islands.....................	S. 84 W.	.22	S. 36 W.	.28	N. 84 W.	.16
10	308	13. Southwestern Maine	N. 54 W.	.15	S. 59 W.	.18	N. 74 W.	.26
10	311½	14. Carmel, Maine	N. 60 W.	.34	S. 66 W.	.34	N. 85 W.	.25
10	313	15. Southeastern Maine.....................................	N. 67 W.	.21	S. 63 W	.40	N. 79 W.	.25
		Mean resultant..............................	N. 75 W.	.26	S. 67 W.	.27	N. 80 W.	.29
		Region of the Missouri.						
10	67	1. Bellevue and Omaha, Southeastern Nebraska	N. 87 W.	.28	S. 14 W.	.13	S. 50 W.	.05
10	69	2. Sioux City, Northwestern Iowa....................	....	...	S. 41 W.	.36	N. 78 W.	.29
10	79	3. Border Plains, Northern Iowa	N. 60 W.	.13	S. 1 W.	.21	S. 32 W.	.17
10	88	4. Northeastern Iowa......................................	S. 79 W.	.15	S. 38 W.	.21	S. 74 W.	.21
10	90	5. Southeastern Iowa......................................	N. 82 W.	.18	S. 21 W.	.29	S. 48 W.	.33
11	73	6. Eastern, Central, Northeast'n and East'n Kan.	N. 63 W.	.15	S. 3 W.	.44	S. 60 W.	.18
11	82	7. St. Joseph, Western Missouri........................	S. 76 W.	.20	S. 27 E.	.29	S. 19 W.	.14
11	86	8. St. Louis, Eastern Missouri	N. 86 W.	.34	S. 61 W.	.09	S. 83 W.	.34
11	88	9. Cape Girardeau, Southeastern Missouri..........	S. 88 W.	.17	S. 28 W.	.12	S. 54 W.	.06
		Mean resultant..............................	N. 84 W.	.20	S. 16 W.	.22	S. 64 W.	.18

	...age of Resultants Observations.				III. Direction and Percentage of Resultants derived from number of Miles Travelled.									
	Winter.		The year.		Spring.		Summer.		Autumn.		Winter.		The year.	
1	S. 63°W.	.26	S. 68°W.	.28	S. 50°W.	.21	N. 85°W.	.21	S. 65°W.	.22	S. 72°W.	.17	S. 70°W.	.20
1	N. 80 E.	.24	S. 71 W.	.16	S. 58 W.	.38	N. 60 W.	.85	S. 22 W.	.46	S. 8 E.	.38	S. 62 W.	.33
2	N. 14 W.	.13	S. 62 W.	.17	S. 45 W.	.33	S. 45 W.	.43	N. 85 W.	.12	N. 20 W.	.09	S. 58 W.	.21
3	S. 49 E.	.01	S. 48 W.	.13	N. 89 W.	.43	N. 73 W.	.51	N. 59 W.	.62	S. 76 W.	.33	N. 78 W.	.45
	N. 53 E.	**.09**	**S. 61 W.**	**.15**	**S. 67 W.**	**.34**	**N. 80 W.**	**.52**	**S. 83 W.**	**.28**	**S. 39 W.**	**.16**	**S. 79 W.**	**.31**
1	S. 5 W.	.43	N. 36 W.	.07	N. 24 W.	.44	N. 80 E.	.05	S. 24 W.	.09	S. 3 W.	.76	S. 28 W.	.10
1	N. 43 W.	.28	………	...	N. 9 E.	.09	S. 45 W.	.38	………	...	N. 35 W.	.49		
2	N. 58 W.	.34	N. 83 W.	.28	N. 65 W.	.23	S. 48 W.	.29	N. 83 W.	.33	N. 53 W.	.47	N. 78 W.	.28
3	N. 73 W.	.27	N. 84 W.	.14	N. 34 W.	.29	S. 36 W.	.12	S. 74 W.	.23	N. 62 W.	.23	N. 71 W.	.18
4	………	...	………	...	N. 73 W.	.23	S. 18 W.	.18	S. 75 W.	.49				
5	N. 73 W.	.11	………	...	S. 32 E.	.13	………	...	S. 30 W.	.18	S. 45 W.	.12		
6	N. 82 W.	.38	N. 44 W.	.14	N. 34 E.	.45	N. 11 E.	.32	N. 4 W.	.30	N. 43 W.	.43	North.	.33
7	N. 28 W.	.19	N. 56 W.	.12	N. 36 E.	.29	S. 77 W.	.03	N. 63 W.	.40	N. 8 W.	.31	N. 23 W	.23
8	N. 82 W.	.34	S. 79 W.	.24	S. 41 W.	.14	S. 57 W.	.34	S. 84 W.	.15	N. 73 W.	.19	S. 71 W	.19
9	S. 59 W.	.17	………	...	N. 72 E.	.04	………	...	N. 59 W.	.17	N. 82 W.	.22		
10	S. 86 W.	.39	S. 83 W.	.29	N. 79 W.	.15	S. 72 W.	.27	S. 80 W.	.35	S. 87 W.	.38	S. 85 W.	.27
11	S. 85 W.	.30	S. 63 W.	.17	N. 69 W.	.09	S. 38 W.	.21	S. 61 W.	.23	N. 84 W.	.27	S. 76 W.	.18
	N. 76 W.	**.26**	**N. 88 W.**	**.19**	**N. 20 W.**	**.10**	**S. 55 W.**	**.17**	**N. 88 W.**	**.23**	**N. 59 W.**	**.27**	**N. 75 W.**	**.18**
1	N. 63 W.	.28	N. 87 W.	.25	N. 35 W.	.25	N. 87 W.	.32	N. 77 W.	.28	N. 71 W.	.40	N. 68 W.	.30
2	S. 6 W.	.29	South.	.30	S. 37 W.	.32	S. 26 W.	.27	S. 3 E.	.30	S. 18 W.	.35	S. 18 W.	.32
3	N. 76 W.	.44	N. 87 W.	.32	N. 78 W.	.25	S. 53 W.	.30	S. 83 W.	.35	West.	.52	S. 84 W.	.35
4	S. 88 W.	.19	………	...	S. 64 W.	.37	………	...	………	...	N. 80 W.	.24		
5	N. 87 W.	.37	N. 84 W.	.30	N. 85 W.	.35	S. 77 W.	.31	S. 72 W.	.41	S. 87 W.	.48	S. 83 W.	.37
	N. 66 W.	**.27**	**S. 74 W.**	**.22**	**S. 84 W.**	**.25**	**S. 64 W.**	**.30**	**S. 21 W.**	**.27**	**S. 87 W.**	**.34**	**S. 76 W.**	**.28**
1	N. 47 W.	.42	N. 61 W.	.19	N. 57 W.	.26	S. 34 E.	.22	S. 9 E.	.06	N. 41 W.	.61	N. 52 W.	.15
2	S. 73 W.	.19	S. 51 W.	.22	S. 80 W.	.20	S. 35 W.	.40	S. 56 W.	.32	S. 76 W.	.35	S. 61 W.	.30
3	S. 82 W.	.17	S. 60 W.	.18	N. 86 W.	.10	S. 25 W.	.19	S. 58 W.	.23	S. 47 W.	.10	S. 55 W.	.13
4	N. 56 W.	.32	N. 78 W.	.25	N. 49 W.	.41	S. 62 W.	.18	N. 89 W.	.29	N. 52 W.	.48	N. 68 W.	.30
5	N. 56 W.	.36	N. 83 W.	.23	S. 38 W.	.27	S. 42 W.	.18	N. 77 W.	.25	N. 49 W.	.38	N. 60 W.	.24
6	N. 85 W.	.63	N. 73 W.	.66	S. 85 W.	.68	N. 60 W.	.75	N. 53 W.	.83	N. 79 W.	.65	N. 70 W.	.70
7	N. 62 W.	.43	N. 73 W.	.35	N. 45 W.	.35	N. 88 W.	.28	N. 72 W.	.41	N. 60 W.	.50	N. 63 W.	.38
8	N. 49 W.	.49	N. 69 W.	.29	N. 47 W.	.38	S. 78 W.	.26	N. 63 W.	.34	N. 45 W.	.53	N. 56 W.	.37
9	N. 54 W.	.49	N. 73 W.	.32	N. 44 W.	.28	S. 57 W.	.29	N. 82 W.	.32	N. 53 W.	.52	N. 68 W.	.31
10	N. 59 W.	.47	N. 73 W.	.33	N. 37 W.	.34	S. 75 W.	.27	N. 80 W.	.37	N. 49 W.	.52	N. 59 W.	.36
11	N. 65 W.	.42	N. 89 W.	.32	N. 55 W.	.30	S. 59 W.	.39	S. 83 W.	.28	N. 57 W.	.46	N. 77 W.	.32
12	N. 57 W.	.40	N. 89 W.	.22	N. 56 W.	.21	S. 37 W.	.26	N. 57 W.	.25	N. 44 W.	.47	N. 59 W.	.26
13	N. 48 W.	.36	N. 69 W.	.21	N. 21 W.	.20	S. 37 W.	.19	N. 66 W.	.19	N. 30 W.	.39	N. 50 W.	.18
14	N. 49 W.	.43	N. 74 W.	.31	N. 51 W.	.48	S. 82 W.	.39	N. 64 W.	.36	N. 40 W.	.53	N. 57 W.	.42
15	N. 31 W.	.35	N. 75 W.	.25	N. 41 W.	.25	S. 71 W.	.39	N. 62 W.	.22	N. 22 W.	.39	N. 52 W.	.26
	N. 59 W.	**.38**	**N. 79 W.**	**.27**	**N. 61 W.**	**.28**	**S. 66 W.**	**.26**	**N. 76 W.**	**.29**	**N. 52 W.**	**.43**	**N. 71 W.**	**.29**
1	West.	.20	S. 75 W.	.14	N. 75 W.	.42	S. 25 W.	.19	S. 56 W.	.08	N. 46 W.	.33	N. 84 W.	.22
2	S. 26 W.	.33	………	...	………	...	S. 54 W.	.32	N. 55 W.	.44	N. 81 W.	.32		
3	N. 43 W.	.13	S. 56 W.	.09	N. 57 W.	.27	S. 8 E.	.24	S. 52 W.	.20	N. 33 W.	.25	N. 84 W.	.14
4	N. 62 W.	.21	S. 78 W.	.18	N. 76 W.	.19	S. 41 W.	.27	S. 87 W.	.26	N. 49 W.	.33	N. 84 W.	.23
5	N. 76 W.	.39	S. 61 W.	.29	N. 81 W	.15	S. 42 W.	.27	S. 75 W.	.35	N. 57 W.	.38	N. 88 W.	.27
6	S. 65 W.	.19	S. 41 W.	.18	N. 52 W.	.26	S. 10 W.	.49	N. 87 W.	.22	N. 70 W.	.29	S. 75 W.	.20
7	S. 78 W.	.21	S. 33 W.	.14	S. 66 W.	.22	S. 9 W.	.28	N. 79 W.	.16	N. 84 W.	.30	S. 61 W.	.18
8	S. 82 W.	.36	S. 84 W.	.28	N. 85 W.	.46	N. 81 W.	.40	N. 86 W.	.46	N. 89 W.	.41	N. 86 W.	.43
9	S. 53 W.	.05	S. 61 W.	.09	N. 66 W.	.35	S. 56 W.	.20	S. 68 W.	.11	N. 66 W.	.09	S. 68 W.	.19
	S. 83 W.	**.20**	**S. 64 W.**	**.17**	**N. 75 W.**	**.28**	**S. 37 W.**	**.25**	**West.**	**.24**	**N. 73 W.**	**.29**	**S. 87 W.**	**.23**

Zone.	Serial number.	I. Place of Observation.	II. Direction and Percent- derived from No. of					
			Spring.		Summer.		Autumn.	
		South of the Great Lakes.						
10	101	1. Western Illinois, lat. 40° to 41°	S. 54° W.	.11	S. 34° W.	.23	S. 58° W.	.24
10	106	2. Northeastern Illinois	S. 72 W.	.21	S. 37 W.	.28	S. 47 W.	.33
10	108	3. West Urbana, Eastern Illinois, lat. 40° to 41°	N. 81 E.	.07	S. 53 W.	.15	S. 62 W.	.21
10	110	4. Northwestern Indiana	N. 52 W.	.17	S. 77 W.	.25	S. 1 E.	.13
10	113	5. Kendallville, Northeastern Indiana	S. 53 W.	.17	S. 60 W.	.46	S. 39 W.	.41
10	115	6. Southwestern Michigan	West.	.20	S. 70 W.	.25	S. 67 W.	.22
10	117	7. Grand Traverse, Michigan	....	...	....	...	S. 63 W.	.49
10	122	8. Southeastern Michigan	N. 60 W.	.15	S. 81 W.	.24	S. 81 W.	.28
10	124	9. Northwestern Ohio	S. 72 W.	.32	S. 49 W.	.31	S. 55 W.	.25
10	128	10. Northeastern Ohio	N. 89 W.	.30	S. 78 W.	.33	S. 64 W.	.25
		Mean resultant	**S. 85 W.**	**.16**	**S. 60 W.**	**.27**	**S. 56 W.**	**.27**
		Illinois, Indiana and Ohio, south of lat. 40°.						
11	90	1. Southwestern Illinois	S. 84 W.	.17	S. 60 W.	.31	S. 60 W.	.25
11	92	2. West Salem, Southeastern Illinois	N. 62 W.	.15	S. 16 W.	.18	S. 37 W.	.24
11	98	3. Southwestern Indiana	N. 70 W.	.31	S. 69 W.	.40	S. 56 W.	.30
11	100	4. Southeastern Indiana	S. 84 W.	.19	S. 78 W.	.19	S. 77 W.	.16
11	108	5. Southwestern Ohio	N. 85 W.	.22	S. 75 W.	.32	S. 74 W.	.26
11	114	6. Southeastern Ohio	N. 84 W.	.21	N. 71 W.	.21	S. 85 W.	.23
		Mean resultant	**N. 82 W.**	**.20**	**S. 70 W.**	**.25**	**S. 64 W.**	**.23**
		New York to North Carolina, west of Appalachian Range.						
10	137	1. Northwestern Pennsylvania	S. 79 W.	.33	S. 75 W.	.35	S. 39 W.	.37
10	143	2. W. Pennsylvania and W. Va., north of 40°	S. 87 W.	.31	S. 80 W.	.35	S. 79 W.	.28
10	159	3. Western New York	S. 71 W.	.19	S. 72 W.	.42	S. 59 W.	.32
11	116	4. Northwestern Virginia, south of 40°	S. 75 W.	.28	S. 24 W.	.17	S. 33 W.	.08
11	118	5. Central Virginia	N. 87 W.	.46	S. 79 W.	.30	S. 82 W.	.33
11	123	6. Chapel Hill, Middle North Carolina	N. 81 W.	.30	West.	.34	N. 63 W.	.36
		Mean resultant	**S. 86 W.**	**.31**	**S. 75 W.**	**.31**	**S. 74 W.**	**.26**
		Middle States, east of the Appalachian Range.						
10	166	1. Central Pennsylvania	N. 76 W.	.38	S. 83 W.	.33	S. 87 W.	.40
10	186	2. Central New York	S. 85 W.	.34	S. 72 W.	.39	S. 66 W.	.36
10	189	3. Berwick, Northeastern Pennsylvania	S. 80 W.	.17	S. 9 E.	.07	S. 87 W.	.39
10	195	4. Eastern Pennsylvania	N. 78 W.	.29	S. 67 W.	.29	N. 85 W.	.29
10	208	5. Northeastern New York	S. 79 W.	.29	S. 63 W.	.43	S. 76 W.	.35
10	226	6. Eastern New York	N. 82 W.	.26	S. 65 W.	.32	S. 76 W.	.29
10	242	7. Southeastern New York	N. 83 W.	.17	S. 34 W.	.20	N. 83 W.	.19
10	247	8. Northern and Central New Jersey	N. 81 W.	.25	S. 69 W.	.29	West.	.29
10	272	9. Long Island, New York	N. 76 W.	.21	S. 34 W.	.23	S. 77 W.	.19
11	132	10. Southern Pennsylvania & Northern Maryland	S. 88 W.	.40	S. 71 W.	.37	S. 88 W.	.36
11	137	11. District of Columbia and Southern Maryland	N. 82 W.	.15	S. 55 W.	.18	N. 89 W.	.19
11	157	12. Delaware, S. E. Pennsylvania and S. N. Jersey	N. 64 W.	.27	S. 76 W.	.19	N. 70 W.	.24
		Mean resultant	**N. 84 W.**	**.25**	**S. 64 W.**	**.26**	**S. 86 W.**	**.29**
		Kentucky and Tennessee.						
11	94	1. Western Tennessee	S. 55 W.	.24	S. 66 W.	.37	S. 6 E.	.06
11	103	2. Middle Tennessee	S. 76 W.	.06	S. 44 W.	.19	S. 1 W.	.09
11	106	3. Northern and Central Kentucky	S. 89 W.	.29	S. 80 W.	.29	S. 64 W.	.25
11	111	4. Eastern Tennessee	S. 80 W.	.20	N. 15 W.	.15	N. 23 W.	.16
		Mean resultant	**S. 75 W.**	**.19**	**S. 77 W.**	**.20**	**S. 68 W.**	**.07**
		Atlantic Coast, lat. 31° to 38°.						
11	125	1. Northeastern Virginia	S. 86 W.	.20	S. 44 W.	.17	S. 84 W.	.15
11	142	2. Southeastern Virginia	S. 66 W.	.19	S. 38 W.	.28	N. 58 W.	.14
11	144	3. Eastern North Carolina	S. 62 W.	.19	S. 26 W.	.25	N. 57 W.	.13
12	127	4. Georgia, lat. 33° to 34°	N. 73 W.	.18	S. 84 W.	.10	N. 33 E.	.24
12	137	5. South Carolina, lat. 34° to 35°	N. 81 W.	.18	S. 33 W.	.28	N. 25 W.	.16

	Age of Resultants Observations.				III. Direction and Percentage of Resultants derived from number of Miles Travelled.									
	Winter.		The year		Spring.		Summer.		Autumn.		Winter.		The year.	
1	S. 80° W.	.18	S. 56° W.	.18	S. 83° W.	.22	S. 54° W.	.32	S. 71° W.	.33	S. 79° W.	.27	S. 72° W.	.28
2	S. 64 W.	.36	S. 54 W.	.29	S. 88 W.	.22	S. 49 W.	.36	S. 57 W.	.38	S. 63 W.	.36	S. 62 W.	.32
3	S. 51 W.	.34	S. 52 W.	.16	N. 42 E.	.23	S. 51 W.	.30	S. 83 W.	.37	S. 45 W.	.34	S. 82 W.	.09
4	S. 61 W.	.29	S. 71 W.	.16	N. 24 W.	.30	S. 78 W.	.22	N. 82 W.	.21	S. 80 W.	.35	N. 75 W.	.22
5	N. 81 W.	.23	S. 58 W.	.30	N. 80 W.	.31	S. 71 W.	.49	S. 56 W.	.41	N. 66 W.	.35	S. 83 W.	.36
6	S. 70 W.	.29	S. 73 W.	.24	S. 84 W.	.29	S. 75 W.	.35	S. 73 W.	.36	S. 77 W.	.38	S. 77 W.	.34
7	S. 72 W.	.41	....	...	....	...	....	...	S. 53 W.	.59	S. 82 W.	.53		
8	S. 87 W.	.28	S. 89 W.	.23	N. 68 W.	.27	N. 88 W.	.33	S. 87 W.	.37	N. 86 W.	.36	N. 87 W.	.33
9	S. 66 W.	.35	S. 61 W.	.30	S. 76 W.	.31	S. 59 W.	.39	S. 54 W.	.32	S. 73 W.	.37	S. 65 W.	.35
10	S. 62 W.	.38	S. 73 W.	.31	N. 87 W.	.34	S. 83 W.	.39	S. 74 W.	.32	S. 70 W.	.43	S. 79 W.	.36
	S. 70 W.	**.30**	**S. 65 W.**	**.24**	**N. 76 W.**	**.22**	**S. 68 W.**	**.34**	**S. 69 W.**	**.36**	**S. 77 W.**	**.36**	**S. 79 W.**	**.36**
1	N. 88 W.	.29	S. 73 W.	.25	S. 85 W.	.25	S. 58 W.	.40	S. 70 W.	.34	N. 87 W.	.29	S. 76 W.	.31
2	S. 42 W.	.18	S. 46 W.	.15	N. 76 W.	.25	S. 33 W.	.29	S. 51 W.	.33	S. 35 W.	.34	S. 55 W.	.27
3	S. 54 W.	.21	S. 73 W.	.25	N. 76 W.	.32	S. 70 W.	.37	S. 62 W.	.38	S. 64 W.	.53	S. 76 W.	.31
4	S. 65 W.	.25	S. 75 W.	.20	S. 84 W.	.30	S. 83 W.	.25	S. 90 W.	.21	S. 76 W.	.35	S. 86 W.	.28
5	S. 70 W.	.30	S. 77 W.	.27	N. 87 W.	.37	S. 78 W.	.41	S. 78 W.	.34	S. 78 W.	.46	S. 82 W.	.40
6	S. 82 W.	.32	N. 88 W.	.24	S. 81 W.	.26	N. 80 W.	.18	S. 76 W.	.30	S. 86 W.	.45	S. 85 W.	.29
	S. 68 W.	**.25**	**S. 75 W.**	**.22**	**N. 88 W.**	**.29**	**S. 69 W.**	**.30**	**S. 70 W.**	**.31**	**S. 72 W.**	**.39**	**S. 77 W.**	**.30**
1	S. 57 W.	.41	S. 62 W.	.35	S. 85 W.	.47	S. 85 W.	.50	S. 43 W.	.53	S. 65 W.	.58	S. 69 W.	.50
2	S. 77 W.	.30	S. 81 W.	.31	S. 86 W.	.46	S. 76 W.	.47	S. 75 W.	.41	S. 76 W.	.47	S. 76 W.	.45
3	S. 63 W.	.41	S. 66 W.	.33	S. 62 W.	.19	S. 67 W.	.47	S. 62 W.	.37	S. 63 W.	.52	S. 64 W.	.39
4	S. 60 W.	.21	S. 55 W.	.17	S. 86 W.	.27	S. 18 W.	.14	S. 69 W.	.07	S. 73 W.	.20	S. 68 W.	.15
5	S. 81 W.	.37	S. 85 W.	.36	N. 85 W.	.55	S. 79 W.	.41	S. 88 W.	.49	N. 87 W.	.51	S. 89 W.	.50
6	N. 77 W.	.40	N. 78 W.	.34	N. 73 W.	.45	N. 83 W.	.37	N. 53 W.	.43	N. 77 W.	.49	N. 71 W.	.43
	S. 74 W.	**.34**	**S. 77 W.**	**.30**	**West.**	**.39**	**S. 77 W.**	**.38**	**S. 77 W.**	**.34**	**S. 79 W.**	**.45**	**S. 80 W.**	**.39**
1	N. 74 W.	.45	N. 84 W.	.38	N. 63 W.	.47	S. 88 W.	.35	N. 72 W.	.42	N. 55 W.	.64	N. 65 W.	.47
2	S. 77 W.	.33	S. 75 W.	.35	N. 89 W.	.41	S. 71 W.	.41	S. 69 W.	.40	S. 82 W.	.44	S. 79 W.	.41
3	N. 82 W.	.25	S. 83 W.	.20	S. 79 W.	.35	S. 77 W.	.48	S. 80 W.	.40	S. 86 W.	.49	S. 81 W.	.42
4	N. 60 W.	.35	N. 82 W.	.29	N. 58 W.	.37	S. 70 W.	.27	N. 73 W.	.33	N. 57 W.	.48	N. 70 W.	.34
5	S. 89 W.	.26	S. 75 W.	.33	S. 81 W.	.32	S. 63 W.	.49	S. 70 W.	.44	S. 74 W.	.35	S. 71 W.	.40
6	N. 75 W.	.32	S. 86 W.	.29	N. 78 W.	.31	S. 58 W.	.39	S. 69 W.	.30	N. 84 W.	.32	S. 83 W.	.30
7	N. 60 W.	.33	N. 87 W.	.19	N. 63 W.	.14	S. 36 W.	.10	N. 88 W.	.13	N. 53 W.	.28	N. 74 W.	.16
8	N. 73 W.	.37	N. 88 W.	.29	N. 65 W.	.28	S. 78 W.	.29	N. 77 W.	.29	S. 82 W.	.43	N. 74 W.	.32
9	N. 62 W.	.35	S. 81 W.	.21	N. 77 W.	.21	S. 35 W.	.26	N. 89 W.	.22	N. 61 W.	.45	S. 83 W.	.25
10	N. 81 W.	.44	S. 88 W.	.44	N. 79 W.	.48	S. 66 W.	.39	N. 83 W.	.40	N. 73 W.	.54	N. 84 W.	.44
11	N. 74 W.	.31	N. 89 W.	.20	N. 58 W.	.36	S. 79 W.	.21	N. 63 W.	.22	N. 53 W.	.50	N. 61 W.	.33
12	N. 59 W.	.39	N. 70 W.	.26	N. 52 W.	.40	S. 78 W.	.27	N. 63 W.	.33	N. 53 W.	.56	N. 60 W.	.39
	N. 79 W.	**.33**	**S. 89 W.**	**.28**	**N. 73 W.**	**.33**	**S. 69 W.**	**.32**	**N. 88 W.**	**.31**	**N. 72 W.**	**.46**	**N. 83 W.**	**.34**
1	S. 32 W.	.21	S. 51 W.	.21	S. 28 W.	.35	S. 76 W.	.33	S. 59 W.	.36	S. 67 W.	.36	S. 70 W.	.30
2	S. 80 W.	.13	S. 50 W.	.11	S. 73 W.	.18	S. 51 W.	.22	S. 60 W.	.13	S. 65 W.	.28	S. 64 W.	.21
3	S. 74 W.	.39	S. 77 W.	.30	S. 83 W.	.36	S. 78 W.	.36	S. 67 W.	.35	S. 71 W.	.48	S. 75 W.	.39
4	S. 78 W.	.23	N. 68 W.	.14	S. 65 W.	.32	N. 11 W.	.12	N. 38 W.	.14	S. 58 W.	.27	S. 78 W.	.18
	S. 67 W.	**.23**	**S. 72 W.**	**.18**	**S. 61 W.**	**.28**	**S. 79 W.**	**.22**	**S. 72 W.**	**.22**	**S. 66 W.**	**.35**	**S. 72 W.**	**.27**
1	N. 70 W.	.25	S. 85 W.	.18	N. 77 W.	.32	S. 59 W.	.22	N. 80 W.	.23	N. 60 W.	.38	N. 78 W.	.28
2	N. 88 W.	.23	S. 73 W.	.18	S. 76 W.	.21	S. 33 W.	.32	N. 10 W.	.16	N. 89 W.	.34	S. 81 W.	.20
3	N. 81 W.	.19	S. 70 W.	.15	N. 85 W.	.20	S. 32 W.	.16	N. 22 W.	.15	N. 66 W.	.23	N. 77 W.	.15
4	N. 60 W.	.22	N. 44 W.	.12	N. 73 W.	.27	N. 51 W.	.10	N. 27 E.	.28	N. 62 W.	.26	N. 42 W.	.17
5	N. 49 W.	.32	N. 77 W.	.17	N. 69 W.	.24	S. 49 W.	.25	N. 7 W.	.24	N. 55 W.	.38	N. 57 W.	.23

Zone.	Serial number.	I. Place of Observation.	II. Direction and Percent- derived from No. of					
			Spring.		Summer.		Autumn.	
		Atlantic Coast.—*Continued.*						
12	140	6. South Carolina, lat. 33° to 34°	S. 30°W.	.28	S. 25°W.	.21	N. 12°W.	.16
12	144	7. South Carolina, lat. 32 to 33	N. 28 W.	.14	S. 17 W.	.26	N. 29 E.	.25
		Mean resultant	S. **78** W.	**.16**	S. **33** W.	**.21**	N. **15** W.	**.13**
		Texas.						
12	61	1. Austin, Central Texas, lat. 30°	S. 32 E.	.20	S. 32 E.	.44	N. 29 W.	.05
12	71	2. Texas, lat. 30° to 31°, long. 95° to 97°	N. 79 E.	.03	N. 27 W.	.16	N. 52 E.	.23
13	15	3. New Braunfels, Texas, lat. 29°	S. 70 E.	.20	S. 48 E.	.42	N. 56 E.	.24
13	13(*a*)	4. San Antonio, Texas, lat. 29°	S. 71 E.	.49	S. 50 E.	.83	N. 70 E.	.47
		Mean resultant	S. **64** E.	**.22**	S. **47** E.	**.38**	N. **59** E.	**.23**
		Gulf States.						
12	86	1. Black River and Trinity, Northeastern La.	S. 24 E.	.15	S. 32 E.	.26	N. 69 E.	.22
12	93	2. Oxford, Mississippi, lat. 34° to 35°	S. 33 W.	.13	S. 4 W.	.31	S. 66 W.	.12
12	95	3. Mississippi, lat. 33° to 34°	N. 46 W.	.17	N. 82 W.	.11	N. 49 E.	.09
12	98	4. Mississippi, lat. 32 to 33	S. 38 W.	.31	S. 5 E.	.42	N. 14 E.	.15
12	101	5. Mississippi, lat. 31 to 32	N. 34 E.	.14	S. 30 E.	.31	N. 12 E.	.26
12	110	6. Alabama, lat. 33 to 34	S. 83 W.	.17	S. 49 E.	.12	S. 87 E.	.05
12	114	7. Alabama, lat. 32 to 33	S. 68 W.	.18	S. 12 W.	.20	S. 42 E.	.10
13	30	8. New Orleans, Southeastern Louisiana	S. 73 E.	.20	S. 41 E.	.31	N. 66 E.	.28
		Mean resultant	S. **45** W.	**.07**	S. **15** E.	**.22**	N. **50** E.	**.10**
		Northern Florida.						
12	120	1. Western Florida, north of lat. 30°	S. 16 W.	.13	S. 7 W.	.28	N. 61 E.	.24
12	133	2. Northeastern Florida	N. 73 W.	.03	S. 12 E.	.24	N. 21 E.	.28
13	41	3. Florida, lat. 29° to 30°	N. 29 W.	.15	S. 5 W.	.10	N. 37 E.	.43
		Mean resultant	N. **83** W.	**.05**	S. **1** E.	**.21**	N. **38** E.	**.31**
14	11	1. Salt Ponds, Florida, lat. 25° N	N. 52 E.	.34	S. 71 E.	.62	N. 50 E.	.56
15	6	2. City of Mexico, Mexico, lat. 19° N	S. 13 E.	.71	N. 63 E.	.29	N. 16 E.	.48
17	22	3. Catharina Sophia, Guiana	N. 63 E.	.79	S. 82 E.	.58	N. 77 E.	.55
24	23	4. Assumption, Paraguay	N. 89 E.	.37	S. 86 E.	.50	....	...
11	175(*a*)	5. Horta Fayal, Azores	N. 64 W.	.10	S. 35 W.	.12	S. 66 E.	.16
7	34(*a*)	6. Sandwick Manse, Orkney Islands	S. 34 E.	.14	S. 38 W.	.20	S. 21 W.	.23
3	6	7. Port Foulke, Arctic Ocean	N. 51 E.	.33	N. 62 E.	.02	N. 43 E.	.48
4	10	8. Port Kennedy, Arctic Ocean	N. 10 W	.35	N. 22 W.	.39	N. 26 W.	.41
10	71	9. St. Mary's, Southeastern Iowa	....	...	....	...	....	...
11	96	10. Bowling Green, Western Kentucky	....	...	....	...	....	...
15	35	11. Bombay, India	N. 58 W.	.62	S. 70 W.	.78	N. 25 W.	.37

	AGE OF RESULTANTS OBSERVATIONS.				III. DIRECTION AND PERCENTAGE OF RESULTANTS DERIVED FROM NUMBER OF MILES TRAVELLED.									
	Winter.		The year.		Spring.		Summer.		Autumn.		Winter.		The year.	
6	S. 70° W.	.27	S. 55° W.	.16	S. 19° W.	.17	S. 5° E.	.31	N. 16° E.	.25	S. 70° W.	.31	S. 34° W.	.11
7	N. 36 W.	.33	N. 31 W.	.10	N. 13 W.	.17	S. 7 E.	.42	N. 32 E.	.26	N. 56 W.	.40	N. 55 W.	.07
	N. 68 W.	**.23**	**West.**	**.13**	**N. 81 W.**	**.19**	**S. 25 W.**	**.21**	**North.**	**.18**	**N. 70 W.**	**.31**	**N. 76 W.**	**.15**
1	N. 45 W.	.16	S. 27 E.	.11	S. 32 E.	.22	S. 25 E.	.55	N. 52 W.	.08	N. 29 W.	.25	S. 22 E.	.11
2	S. 55 E.	.03	N. 43 E.	.09	S. 11 E.	.24	S. 50 E.	.22	N. 72 E.	.30	N. 5 W.	.19	S. 79 E.	.12
3	N. 8 E.	.25	N. 88 E.	.18	S. 87 E.	.18	S. 47 E.	.59	N. 27 E.	.29	N. 3 E.	.36	N. 76 E.	21
4	N. 30 E.	.44	S. 85 E.	.44	N. 84 E.	.39	S. 47 E.	.87	N. 26 E.	.58	N. 4 E.	.61	N. 65 E.	.38
	N. 13 E.	**.19**	**S. 85 E.**	**.18**	**S. 62 E.**	**.20**	**S. 43 E.**	**.54**	**N. 31 E.**	**.28**	**N. 3 W.**	**.35**	**N. 83 E.**	**.18**
1	N. 71 E.	.16	S. 68 E.	.15	N. 5 E.	.10	S. 10 E.	.10	N. 84 E.	.10	N. 75 E.	.10	N. 80 E.	.06
2	S. 78 W.	.22	S. 39 W.	.17	S. 45 W.	.26	S. 13 E.	.32	S. 60 W.	.13	S. 61 W.	.21	S. 35 W.	.20
3	N. 64 E.	.07	N. 25 W.	.06	N. 75 W.	.27	S. 75 W.	.11	N. 25 E.	.04	S. 4 W.	.06	N. 86 W.	.09
4	S. 87 W.	.16	S. 27 W.	.15	S. 51 W.	.33	S. 2 E.	.29	N. 15 E.	.16	N. 83 W.	.26	S. 61 W.	.14
5	N. 6 E.	.14	N. 51 E.	.09	N. 1 E.	.21	S. 50 E.	.18	N. 22 E.	.22	N. 41 W.	.18	N. 16 E.	.10
6	N. 65 W.	.16	S. 78 W.	.04	S. 81 W.	.38	S. 48 E.	.14	N. 36 E.	.02	N. 57 W.	.21	S. 88 W.	.13
7	N. 86 W.	.11	S. 35 W.	.10	N. 85 W.	.17	S. 13 W.	.14	S. 83 E.	.13	S. 86 W.	.12	S. 53 W.	.06
8	N. 54 E.	.22	S. 86 E.	.21	N. 46 E.	.24	S. 65 E.	.30	N. 40 E.	.37	N. 22 E.	.39	N. 47 E.	.28
	N. 31 W.	**.05**	**S. 20 E.**	**.04**	**N. 84 W.**	**.13**	**S. 22 E.**	**.16**	**N. 21 E.**	**.08**	**N. 45 W.**	**.10**	**N. 85 W.**	**.03**
1	N. 7 E.	.28	S. 87 E.	.04	S. 19 W.	.17	S. 5 W.	.33	N. 60 E.	.30	N. 2 W-	.22	S. 68 E.	.04
2	N. 32 W.	.24	N. 2 W.	.06	N. 88 W.	.06	S. 5 E.	.24	N. 25 E.	.22	N. 63 W.	.20	N. 19 W.	.05
3	N. 7 E.	.25	N. 18 E.	.16	N. 39 W.	.14	S. 21 W.	.14	N. 37 E.	.53	N. 4 E.	.30	N. 16 E.	.20
	N. 5 W.	**.25**	**N. 22 E.**	**.07**	**S. 77 W.**	**.07**	**S. 5 W.**	**.23**	**N. 41 E.**	**.34**	**N. 15 W.**	**.21**	**N. 19 E.**	**.08**
1	N. 40 E.	.46	N. 65 E.	.43	N. 54 E.	.37	S. 76 E.	.71	N. 47 E.	.64	N. 30 E.	.49	N. 59 E.	.47
2	S. 17 W.	.45	S. 38 E.	.17	S. 14 E.	.66	N. 78 E.	.32	N. 25 E.	.43	S. 9 W.	.47	S. 43 E.	.27
3	N. 69 E.	.69	N. 75 E.	.64	N. 56 E.	.86	N. 83 E.	.65	N. 62 E.	.64	N. 58 E.	.80	N. 63 E.	.73
4	....	...	....	...	S. 82 E.	.38	N. 13 E.	.52						
5	S. 80 E.	.13	S. 38 E.	.05	S. 75 W.	.16	S. 43 W.	.21	S. 58 E.	.26	S. 78 E.	.10	S. 13 E.	.08
6	S. 12 W.	.30	S. 14 W.	.20	S. 3 E.	.17	S. 62 W.	.22	S. 56 W.	.28	S. 62 W.	.33	S. 51 W.	.23
7	N. 47 E.	.41	N. 45 E.	.32	N. 49 E.	.61	S. 82 W.	.02	N. 44 E.	.63	N. 41 E.	.79	N. 43 E.	.54
8	N. 39 W.	.67	N. 25 W.	.46	N. 30 W.	.55	N. 31 W.	.60	N. 29 W.	.52	N. 44 W.	.83	N. 35 W.	.62
9	N. 54 E.	.19	....	...	....	...	....	...	....	...	S. 64 E.	.41		
10	....	...	S. 38 W.	.29	....	...	....	...	....	...	....	...	S. 37 W.	.33
11	N. 5 W.	.64	N. 45 W.	.42										

Zone.	Serial number.	I. Place of Observation.	IV. Average Velocity of all Winds: Spring.	Summer	Autumn.	Winter.	Year.
8	15	1. Red River Settlement, lat. 50°, long. 97°.......	5.33	5.23	5.71	3.51	4.94
		Pacific Coast.					
10	47	1. Salt Lake City, Utah, lat. 41°......................	5.03	5.24	4.85	4.59	4.93
11	21	2. San Francisco, etc., Cal., lat. 38° to 39°........	4.40	5.42	5.38	4.82	5.00
12	11	3. San Diego, S. W. Cal., lat. 33°....................	4.41	3.76	1.86	2.94	3.24
		Mean resultant............................	**4.61**	**4.81**	**4.03**	**4.12**	**4.39**
		Northern Lake Region.					
9	41	1. Red Lake, Northwestern Minnesota...............	......	......	......	7.95	......
9	41	2. St. Joseph, Northwestern Minnesota	9.16	7.87	......	9.04	......
9	43	3. Hazlewood, Western Minnesota..................	6.77	5.17	4.40	4.99	5.33
9	46	4. Princeton, Central Minnesota.......................	8.14	6.45	7.08	6.65	7.08
9	48	5. St. Anthony, Eastern Minnesota	9.09	5.12	7.00	......	......
9	50	6. Lake Winnibigoshish, N. and N. E. Minnesota	4.26	......	4.02	5.07	......
9	52	7. Bay City and Superior, Northwestern Wis.....	7.82	7.55	8.07	4.56	7.00
9	56	8. Northern Michigan, west of long. 87°...........	10.79	6.06	14.51	16.29	11.91
9	64	9. St. James, Northern Mich., east of long. 87°...	13.68	14.59	15.11	13.72	14.27
10	83½	10. Southeast'n Minnesota and West'n Wisconsin	8.07	......	7.77	4.60	......
10	96	11. Eastern Wisconsin..................................	10.58	5.24	6.98	7.14	7.49
10	99	12. Southeastern Wisconsin	7.30	4.55	6.49	6.25	6.15
		Mean resultant............................	**8.70**	**6.96**	**8.14**	**7.84**	**8.46**
		Canada and Nova Scotia.					
9	66	1. Montreal and St. Martin's, Canada East.........	5.97	5.13	7.28	6.84	6.31
9	70	2. Stanbridge, Canada East............................	4.37	4.53	5.83	5.94	4.92
9	83	3. Wolfville, Northern Nova Scotia	10.24	9.65	9.39	12.69	10.49
9	85	4. Albion Mines, Northern Nova Scotia............	9.02	......	......	10.61	......
10	316	5. Windsor, Southern Nova Scotia..................	8.14	10.91	6.44	7.01	8.12
		Mean resultant............................	**7.55**	**7.55**	**7.23**	**8.62**	**7.46**
		New England States.					
9	75	1. Monson, Maine	2.39	4.50	5.25	5.03	4.46
10	251	2. Northern Vermont....................................	7.42	5.78	7.23	8.40	7.21
10	255	3. Southern Vermont	6.01	3.49	4.70	6.09	5.07
10	259	4. Western Massachusetts	10.65	6.94	9.00	11.13	9.43
10	266	5. Connecticut...	8.39	5.69	6.70	8.60	7.34
10	274	6. Mt. Washington, Northern New Hampshire ...	33.05	21.37	35.38	43.67	33.37
10	276	7. Northern New Hampshire	8.16	6.39	6.48	8.91	7.48
10	280	8. Southern New Hampshire	7.77	5.57	6.37	7.72	6.86
10	288	9. Rhode Island..	6.34	4.72	3.76	5.12	4.98
10	295	10. Northeastern Massachusetts.......................	6.43	3.99	4.59	6.18	5.30
10	299	11. Southeastern Massachusetts.......................	7.72	5.26	6.25	7.16	6.60
10	302	12. Cape Cod and adjacent islands	15.49	9.12	13.05	16.27	13.48
10	308	13. Southwestern Maine	7.57	6.95	7.14	7.53	7.30
10	311½	14. Carmel, Maine	10.96	8.02	9.02	11.31	9.83
10	313	15. Southeastern Maine....................................	8.87	6.01	7.92	9.36	8.04
		Mean resultant............................	**9.81**	**6.91**	**8.86**	**10.83**	**9.12**
		Region of the Missouri.					
10	66	1. Bellevue and Omaha, Southeastern Nebraska	5.97	5.13	7.28	6.84	6.31
10	69	2. Sioux City, Northwestern Iowa...................	5.80	......	9.70	6.72	......
10	71	3. St. Mary's, Southeastern Iowa.....................	......	......	......	7.37	......
10	79	4. Border Plains, Northern Iowa	9.82	6.66	12.31	10.58	9.84
10	88	5. Northeastern Iowa......................................	10.95	7.51	9.05	9.06	9.14
10	90	6. Southeastern Iowa......................................	7.56	4.32	5.86	6.49	6.05
11	73	7. Eastern, Central, Northeast'n and East'n Kan.	12.72	4.12	6.28	7.13	7.56
11	82	8. St. Joseph, Western Missouri	11.24	5.72	5.76	4.30	6.75
11	86	9. St. Louis, Eastern Missouri	19.17	10.85	12.64	7.09	14.59
11	88	10. Cape Girardeau, Southeastern Missouri..........	6.20	4.65	5.32	4.81	5.24
		Mean resultant............................	**9.94**	**6.12**	**8.24**	**7.04**	**8.18**

	V. Velocity in Mean Direction by Hypothesis.					VI. True Velocity in Mean Direction.					VII. Excess of the True Velocity over the Velocity by Hypothesis.				
	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.
1	.81	1.00	1.48	.90	1.37	1.13	1.12	1.27	.60	.99	+.32	+.12	—.21	—.30	—.38
1	2.25	.81	.58	1.98	.37	2.21	.26	.43	3.48	.51	—.04	—.55	—.15	+1.50	+.14
2	1.22	2.22	.70	.63	.87	1.48	2.36	.67	.46	1.05	+.26	+.14	—.03	—.17	+.18
3	.75	.98	.20	.03	.42	1.90	1.92	1.16	.98	1.36	+1.15	+.94	+.96	+.95	+.94
	1.41	**1.34**	**.49**	**.88**	**.55**	**1.86**	**1.51**	**.75**	**1.64**	**.97**	**+.46**	**+.18**	**+.26**	**+.76**	**+.42**
1	......	......	......	2.87	......	......	......	......	2.57	......	......	......	......	—.30	
2	1.14	2.41	......	2.50	......	.73	2.45	......	3.27	......	—.41	+.04	......	+.77	
3	1.83	1.41	1.43	1.71	1.52	1.56	1.48	1.45	2.33	1.49	—.27	+.07	+.02	+.62	—.03
4	1.44	.64	1.16	1.79	1.01	2.35	.74	1.68	1.57	1.26	+.91	+.10	+.52	—.22	+.25
5	1.41	2.51	3.64	......	......	2.07	.93	3.45	......	......	+.66	—1.58	—.19		
6	.21	......	.15	.56	......	.54	......	.75	.62	......	+.33	......	+.60	+.06	
7	2.71	.60	1.86	1.73	1.03	3.55	2.39	2.44	1.97	2.30	+.84	+1.79	+.58	+.24	+1.27
8	1.66	.82	3.85	3.06	1.41	3.10	.22	5.83	5.06	2.75	+1.44	—.60	+1.98	+2.00	+1.34
9	2.48	4.27	2.60	4.69	3.41	1.88	5.00	2.33	2.66	2.73	—.60	+.73	—.27	—2.03	—.68
10	1.32	......	1.70	.78	......	.33	......	1.35	1.00	......	—.99	......	—.35	+.22	
11	1.88	1.55	2 32	2.79	2.22	1.58	1.43	2.43	2.75	2.02	—.30	—.12	+.11	—.04	—.20
12	.58	.80	1.45	1.86	1.09	.67	.96	1.51	1.73	1.10	+.09	+.16	+.06	—.13	+.01
	1.52	**1.66**	**2.02**	**2.21**	**1.67**	**1.67**	**1.73**	**2.32**	**2.32**	**1.95**	**+.15**	**+.07**	**+.30**	**+.11**	**+.28**
1	1.23	1.64	1.95	1.94	1.92	1.53	1.67	2.08	2.76	1.92	+.30	+.03	+.13	+.82	.00
2	1.18	1.42	1.99	1.72	1.48	1.41	1.25	1.75	2.11	1.57	+.23	—.17	—.24	+.39	+.09
3	2.91	2.52	3.33	5.61	3.39	2.55	2.91	3.29	6.61	3.69	—.36	+.39	—.04	+1.00	+.30
4	1.06	......	......	2.06	......	3.32	......	......	2.55	......	+2.26	......	......	+.49	
5	2.39	2.35	2.22	2.58	2.48	2.89	3.38	2.64	3.40	3.04	+.50	+1.03	+.42	+.82	+.56
	1.75	**1.98**	**2.37**	**2.78**	**2.32**	**2.34**	**2.30**	**2.44**	**3.49**	**2.55**	**+.59**	**+.32**	**+.07**	**+.71**	**+.23**
1	.44	.45	.69	2.23	.87	.55	1.00	.84	3.41	.72	+.11	+.55	+.15	+1.18	—.15
2	.96	1.95	1.81	1.61	1.56	1.47	2.33	2.34	2.93	2.16	+.51	+.38	+.53	+1.32	+.60
3	1.11	.92	.97	1.03	.94	.62	.68	1.07	.59	.68	—.49	—.24	+.10	—.44	—.26
4	2.80	1.86	2.30	3.55	2.37	3.64	1.88	2.59	4.45	2.84	+.84	+.02	+.29	+.90	+.47
5	1.75	1.38	1.72	3.09	1.72	2.29	1.03	1.67	3.26	1.78	+.54	—.35	—.05	+.17	+.06
6	22.14	15.17	25.82	27.51	22.02	22.64	16.13	29.36	28.39	23.35	+.50	+.96	+3.54	+.88	+1.33
7	2.72	1.67	2.77	3.82	2.66	2.91	1.80	2.70	4.48	2.88	+.19	+.13	—.07	+.66	+.22
8	2.06	1.18	1.80	3.77	1.97	2.96	1.44	2.16	4.12	2.53	+.90	+.26	+.36	+.35	+.56
9	1.51	1.25	1.37	2.53	1.61	1.79	1.38	1.22	2.68	1.56	+.28	+.13	—.15	+.15	—.05
10	1.86	1.02	1.71	2.91	1.77	2.21	1.10	1.73	3.24	1.91	+.35	+.08	+.02	+.33	+.14
11	2.01	1.85	2.19	3.06	2.16	2.30	2.07	1.74	3.32	2.10	+.29	+.22	—.45	+.26	—.06
12	3.39	2.54	2.06	6.59	2.98	3.33	2.40	3.36	7.72	3.60	—.06	—.14	+1.30	+1.13	+.62
13	1.18	1.29	1.88	2.72	1.58	1.55	1.36	1.40	2.93	1.35	+.37	+.07	—.48	+.21	—.23
14	3.75	2.71	2.29	4.90	3.03	5.27	3.13	3.25	5.97	4.13	+1.52	+.42	+.96	+1.07	+1.10
15	1.89	2.39	1.97	3.29	2.16	2.21	2.35	1.73	3.65	2.09	+.32	—.04	—.24	+.36	—.07
	3.31	**2.51**	**3.42**	**4.84**	**3.29**	**3.72**	**2.67**	**3.81**	**5.41**	**3.58**	**+.41**	**+.16**	**+.39**	**+.57**	**+.29**
1	1.23	1.64	1.95	1.94	1.92	1.53	1.67	2.08	2.76	1.92	+.30	+.03	+.13	+.82	.00
2	2.08	......	2.78	2.21	......	1.87	......	4.25	2.20	......	—.21	......	+1.47	—.01	
3	......	......	......	1.40	......	......	......	......	3.02	......	......	......	......	+1.62	
4	1.29	1.41	2.15	1.36	.89	2.63	1.62	2.52	2.70	1.37	+1.34	+.21	+.37	+1.34	+.48
5	1.64	1.57	1.87	1.97	1.63	2.09	2.02	2.40	2.98	2.09	+.45	+.45	+.53	+1.01	+.46
6	.48	1.01	1.10	1.42	.87	1.47	1.23	1.53	2.33	1.43	+.99	+.22	+.43	+.91	+.56
7	1.86	1.83	1.11	1.33	1.36	2.86	1.73	1.35	1.97	1.46	+1.00	—.10	+.24	+.64	+.10
8	2.22	1.68	.78	.90	.97	2.45	1.59	.92	1.27	.61	+.23	—.09	+.14	+.37	—.36
9	6.44	.95	4.27	2.14	4.06	8.78	2.72	5.78	2.93	6.27	+2.34	+1.77	+1.51	+.79	+2.21
10	1.07	.56	.33	.23	.48	2.16	.92	.58	.43	.98	+1.09	+.36	+.25	+.20	+.50
	2.03	**1.33**	**1.82**	**1.49**	**1.52**	**2.87**	**1.69**	**2.38**	**2.26**	**2.01**	**+.84**	**+.36**	**+.56**	**+.77**	**+.49**

Zone.	Serial number.	I. Place of Observation.	IV. Average Velocity of all Winds.				
			Spring.	Summer.	Autumn.	Winter.	Year.
		South of the Great Lakes.					
10	101	1. Western Illinois, lat. 40° to 41°	6.71	4.66	5.21	6.03	5.65
10	106	2. Northeastern Illinois	7.52	6.40	6.66	6.66	6.81
10	108	3. West Urbana, Eastern Illinois, lat. 40° to 41°	12.63	4.80	5.30	5.68	7.10
10	110	4. Northwestern Indiana	7.56	6.05	11.99	6.16	7.94
10	113	5. Kendallville, Northeastern Indiana	7.77	4.42	3.19	9.36	6.18
10	115	6. Southwestern Michigan	6.41	4.44	5.67	7.14	5.91
10	117	7. Grand Traverse, Michigan	......	......	11.93	6.66	......
10	122	8. Southeastern Michigan	7.44	5.41	6.71	7.35	6.73
10	124	9. Northwestern Ohio	10.86	12.62	11.28	10.67	11.36
10	128	10. Northeastern Ohio	8.55	6.18	8.31	8.27	7.83
		Mean resultant	**8.38**	**6.11**	**7.63**	**7.40**	**7.28**
		Illinois, Indiana and Ohio, south of lat. 40°.					
11	90	1. Southwestern Illinois	6.03	4.58	5.27	6.09	5.49
11	92	2. West Salem, Southeastern Illinois	9.37	6.27	8.92	7.97	8.13
11	98	3. Southwestern Indiana	4.59	5.95	7.26	5.85	5.49
11	100	4. Southeastern Indiana	6.71	4 66	5.21	6.03	5.65
11	108	5. Southwestern Ohio	7.21	4.26	5.69	6.97	6.03
11	114	6. Southeastern Ohio	6.29	7.06	5.52	6.34	6.30
		Mean resultant	**6.70**	**5.46**	**6.31**	**6.54**	**6.18**
		New York to North Carolina, west of the Appalachian Range.					
10	137	1. Northwestern Pennsylvania	7.31	4.36	5.07	8.29	6.26
10	143	2. W. Pennsylvania and W. Va., north of 40°	6.37	4.77	5.95	5.54	5.66
10	159	3. Western New York	7.26	5.62	5.95	8.27	6.77
11	116	4. Northwestern Virginia, south of lat. 40°	8.23	7.44	8.72	8.04	8.11
11	118	5. Central Virginia	14.08	7.09	8.50	11.13	10.20
11	123	6. Chapel Hill, Middle North Carolina	4.26	3.16	4.10	4.24	3.94
		Mean resultant	**7.92**	**5.41**	**6.38**	**7.59**	**6.82**
		Middle States, east of the Appalachian Range.					
10	166	1. Central Pennsylvania	5.22	2.81	3.77	4.64	4.11
10	186	2. Central New York	8.99	6.91	8.27	10.56	8.68
10	189	3. Berwick, Northeastern Pennsylvania	5.86	3.00	10.92	6.22	6.50
10	195	4. Eastern Pennsylvania	7.32	4.86	6.16	7.07	6.35
10	208	5. Northeastern New York	6.39	6.04	5.95	6.72	6.27
10	226	6. Eastern New York	7.16	4.94	5.95	7.16	6.30
10	242	7. Southeastern New York	8.30	4.55	6.21	7.49	6.64
10	247	8. Northern and Central New Jersey	10.22	6.75	7.63	9.78	8.59
10	272	9. Long Island, New York	6.90	5.81	6.42	7.26	6.60
11	132	10. Southern Pennsylvania & Northern Maryland	5.84	4.24	5.33	5.74	5.29
11	137	11. District of Columbia and Southern Maryland	9.12	5.44	6.75	8.26	7.39
11	157	12. Delaware, S. E. Pennsylvania and S. N. Jersey	8.23	4.78	6.97	8.20	7.04
		Mean resultant	**7.46**	**5.01**	**6.69**	**7.42**	**6.65**
		Kentucky and Tennessee.					
11	94	1. Western Tennessee	5.33	3.12	2.87	7.02	4.58
11	96	2. Bowling Green, Western Kentucky	......	......	5.14	......	......
11	103	3. Middle Tennessee	6.41	3.22	4.34	7.16	5.28
11	106	4. Northern and Central Kentucky	6.08	4.79	5.54	5.73	5.53
11	111	5. Eastern Tennessee	6.18	4.75	4.60	7.86	5.85
		Mean resultant	**6.00**	**3.97**	**4.50**	**6.94**	**5.31**
		Atlantic Coast, lat. 31° to 38°.					
11	125	1. Northeastern Virginia	8.64	5.26	6.32	6.78	6.75
11	142	2. Southeastern Virginia	6.34	4.22	4.95	5.57	5.27
11	144	3. Eastern North Carolina	9.61	6.18	6.32	8.64	7.69
12	127	4. Georgia, lat. 33° to 34°	8.26	6.38	7.48	7.65	7.44

	V. Velocity in Mean Direction by Hypothesis.					VI. True Velocity in Mean Direction.					VII. Excess of the True Velocity over the Velocity by Hypothesis.				
	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.
1	1.27	.88	.84	1.52	1.11	1.99	1.18	1.07	2.13	1.58	+.72	+.30	+.23	+.61	+.47
2	1.60	1.82	2.24	2.43	1.98	1.68	2.30	2.54	2.46	2.19	+.08	+.48	+.30	+.03	+.21
3	.84	.73	1.10	1.94	1.14	2.93	1.45	1.95	1.96	.63	+2.09	+.72	+.85	+.02	—.51
4	1.32	1.50	1.61	1.78	1.33	2.26	1.33	2.52	2.18	1.77	+.94	—.17	+.91	+.40	+.44
5	1.31	2.03	1.33	2.13	1.84	2.41	2.17	1.33	3.33	2.15	+1.10	+.14	.00	+1.20	+.31
6	1.28	1.13	1.29	2.06	1.41	1.85	1.56	2.07	2.71	2.05	+.57	+.43	+.78	+.65	+.64
7	......	......	6.24	2.74	......	......	......	7.02	3.56	......	......	......	+.78	+.82	
8	1.17	1.31	1.92	2.08	1.58	2.01	1.81	2.48	2.67	2.21	+.84	+.50	+.56	+.59	+.63
9	3.55	3.97	2.83	3.72	3.49	3.42	4.93	3.63	4.00	3.95	—.13	+.96	+.80	+.28	+.46
10	2.62	2.06	2.12	3.16	2.45	2.89	2.45	2.67	3.61	2.87	+.27	+.39	+.55	+.45	+.42
	1.66	**1.71**	**2.15**	**2.35**	**1.82**	**2.38**	**2.13**	**2.73**	**2.86**	**2.16**	**+.72**	**+.42**	**+.58**	**+.51**	**+.34**
1	1.01	1.43	1.34	1.75	1.36	1.51	1.85	1.79	1.79	1.69	+.50	+.42	+.45	+.04	+.33
2	1.36	1.11	2.14	1.45	1.26	2.37	1.80	2.90	2.72	2.17	+1.01	+.69	+.76	+1.27	+.91
3	1.38	1.24	2.29	2.35	1.36	1.45	2.21	2.75	3.09	1.69	+.07	+.97	+.46	+.74	+.33
4	1.27	.88	.84	1.52	1.11	1.99	1.18	1.07	2.13	1.58	+.72	+.30	+.23	+.61	+.47
5	1.61	1.36	1.50	2.13	1.65	2.70	1.75	1.93	3.23	2.38	+1.09	+.39	+.43	+1.10	+.73
6	1.30	1.48	1.28	2.02	1.49	1.63	1.25	1.67	2.86	1.84	+.33	—.23	+.39	+.84	+.35
	1.32	**1.25**	**1.56**	**1.87**	**1.37**	**1.94**	**1.67**	**2.01**	**2.64**	**1.89**	**+.62**	**+.42**	**+.45**	**+.77**	**+.52**
1	2.42	1.53	1.86	3.40	2.20	3.46	2.17	2.71	4.78	3.15	+1.04	+.64	+.85	+1.38	+.95
2	2.01	1.67	1.66	1.65	1.75	2.95	2.24	2.41	2.63	2.53	+.94	+.57	+.75	+.98	+.78
3	1.39	2.33	1.90	3.36	2.25	1.35	2.66	2.23	4.30	2.63	—.04	+.33	+.33	+.94	+.38
4	2.30	1.24	.69	1.66	1.39	2.20	1.08	.58	1.60	1.24	—.10	—.16	—.11	—.06	—.15
5	6.48	2.14	2.77	4.15	3.70	7.80	2.93	4.20	5.72	5.14	+1.32	+.79	+1.43	+1.57	+1.44
6	1.27	1.07	1.46	1.68	1.35	1.91	1.18	1.76	2.09	1.70	+.64	+.11	+.30	+.41	+.35
	2.65	**1.66**	**1.72**	**2.65**	**2.11**	**3.28**	**2.04**	**2.31**	**3.52**	**2.73**	**+.63**	**+.38**	**+.59**	**+.87**	**+.62**
1	1.99	.94	1.51	2.09	1.59	2.46	.99	1.59	2.97	1.96	+.47	+.05	+.08	+.88	+.37
2	3.09	2.72	2.97	3.48	3.06	3.75	2.85	3.31	4.72	3.61	+.66	+.13	+.34	+1.24	+.55
3	.99	.23	4.29	1.57	1.31	2.06	1.45	4.42	3.08	2.75	+1.07	+1.22	+.13	+1.51	+1.44
4	2.17	1.30	1.81	2.50	1.85	2.75	1.34	2.08	3.41	2.20	+.58	+.04	+.27	+.91	+.35
5	1.84	2.61	2.07	1.75	2.06	2.08	3.00	2.62	2.39	2.50	+.24	+.39	+.55	+.64	+.44
6	1.98	1.61	1.71	2.28	1.81	2.24	1.91	1.69	2.27	1.92	+.26	+.30	—.02	—.01	+.11
7	1.39	.92	1.18	2.48	1.26	1.17	.99	1.32	2.80	1.06	—.22	+.07	+.14	+.32	—.20
8	2.62	1.94	2.20	3.58	2.49	2.87	1.96	2.21	4.25	2.74	+.25	+.02	+.01	+.67	+.25
9	1.45	1.38	1.25	2.53	1.39	1.50	1.51	1.40	3.29	1.66	+.05	+.13	+.15	+.76	+.27
10	2.35	1.57	1.95	2.50	2.33	2.82	1.65	2.11	3.11	2.35	+.47	+.08	+.16	+.61	+.02
11	1.40	1.00	1.28	2.60	1.47	3.29	1.12	1.45	4.11	2.42	+1.89	+.12	+.17	+1.51	+.95
12	2.20	.90	1.69	3.21	1.85	3.30	1.28	2.33	4.59	2.77	+1.10	+.38	+.64	+1.38	+.92
	1.96	**1.43**	**1.99**	**2.55**	**1.87**	**2.53**	**1.67**	**2.21**	**3.42**	**2.33**	**+.57**	**+.24**	**+.22**	**+.87**	**+.46**
1	1.25	1.16	1.16	1.45	.95	1.88	1.02	1.02	2.50	1.39	+.63	—.14	—.14	+1.05	+.44
2	......	......	1.49	......	......	......	......	1.71	......	......	......	......	+.22		
3	.37	.62	.39	.95	.55	1.14	.71	.55	2.01	1.10	+.77	+.09	+.16	+1.06	+.55
4	1.73	1.38	1.41	2.22	1.67	2.19	1.72	1.92	2.75	2.13	+.46	+.34	+.51	+.53	+.46
5	1.23	.72	.72	1.80	.82	2.00	.56	.65	2.13	1.06	+.77	—.16	—.07	+.33	+.24
	1.14	**.97**	**1.03**	**1.61**	**1.00**	**1.80**	**1.00**	**1.17**	**2.35**	**1.42**	**+.66**	**+.03**	**+.14**	**+.74**	**+.42**
1	1.75	.88	.97	1.72	1.20	2.80	1.16	1.43	2.55	1.87	+1.05	+.28	+.46	+.83	+.67
2	1.20	1.18	.70	1.30	.96	1.36	1.35	.80	1.91	1.04	+.16	+.17	+.10	+.61	+.08
3	1.82	1.56	.83	1.67	1.18	1.91	1.00	.94	2.02	1.18	+.09	—.56	+.11	+.35	.00
4	1.47	.66	1.79	1.69	.91	2.23	.63	2.08	2.02	1.28	+.76	—.03	+.29	+.33	+.37

Zone	Serial number.	I. Place of Observation.	IV. Average Velocity of all Winds. Spring.	Summer.	Autumn.	Winter.	Year.
		Atlantic Coast.—*Continued.*					
12	137	5. South Carolina, lat. 34° to 35°	11.11	8.69	8.82	10.40	9.75
12	140	6. South Carolina, lat. 33 to 34	10.29	9.28	9.00	8.48	9.26
12	144	7. South Carolina, lat. 32 to 33	9.51	8.61	6.44	9.09	8.40
		Mean resultant	**9.11**	**6.95**	**7.05**	**8.09**	**7.79**
		Texas.					
12	61	1. Austin, Central Texas, lat. 30°, lon. 98°	7.83	7.42	6.66	8.85	7.69
12	71	2. Texas, lat. 30° to 31°, long. 95° to 97°	11.35	6.83	4.79	7.36	7.58
13	15	3. New Braunfels, S. Cent. Texas, lat. 29° to 30°	7.52	5.82	6.58	7.92	6.96
13	13(*a*)	4. San Antonio, Texas, lat. 29° (by anemometer)	8.24	7.10	8.86	12.88	9.27
		Mean resultant	**8.73**	**6.79**	**6.72**	**9.25**	**7.87**
		Gulf States.					
12	86	1. Black River and Trinity, Northeastern La.	7.20	4.26	4.91	6.25	5.65
12	93	2. Oxford, Mississippi, lat. 34° to 35°	9.59	7.42	7.42	9.41	8.46
12	95	3. Mississippi, lat. 33° to 34°	4.77	3.97	4.29	4.34	4.34
12	98	4. Mississippi, lat. 32 to 33	4.30	3.57	4.14	4.83	4.21
12	101	5. Mississippi, lat. 31 to 32	5.24	6.14	4.57	5.29	5.31
12	110	6. Alabama, lat. 33 to 34	7.29	4.37	7.01	5.38	6.01
12	114	7. Alabama, lat. 32 to 33	5.72	3.78	5.54	6.32	5.34
13	30	8. New Orleans, Southeastern Louisiana	6.07	5.00	5.82	6.68	5.89
		Mean resultant	**6.27**	**4.81**	**5.46**	**6.06**	**5.65**
		Florida.					
12	120	1. Western Florida, north of lat. 30°	8.42	7.23	7.57	9.27	8.12
12	133	2. Northeastern Florida	5.75	4.99	5.19	5.00	5.23
13	41	3. Florida, lat. 29° to 30°	7.59	6.01	7.66	7.49	7.19
		Mean resultant	**7.25**	**6.08**	**6.81**	**7.25**	**6.84**
14	11	1. Salt Ponds, Florida, lat. 25° N	15.43	12.38	13.78	16.66	14.56
15	6	2. City of Mexico, Mexico, lat. 19° N	3.82	2.73	3.34	6.82	4.18
17	22	3. Catharina Sophia, Guiana	8.55	7.51	9.31	10.86	9.06
24	23	4. Assumption, Paraguay	5.57	6.01	......	......	......
11	175(*a*)	5. Horta Fayal, Azores	13.24	10.01	12.63	15.49	12.84
7	34(*a*)	6. Sandwick Manse, Orkney Islands	15.79	12.99	14.63	19.19	15.65
3	6	7. Port Foulke, Arctic Ocean	11.30	15.82	26.74	21.79	18.84
4	10	8. Port Kennedy, Arctic Ocean	15.18	14.57	22.79	15.96	17.16
15	35	9. Bombay, India	10.76	18.14	10.54	10.39	12.50

	V. Velocity in Mean Direction by Hypothesis.					VI. True Velocity in Mean Direction.					VII. Excess of the True Velocity over the Velocity by Hypothesis.				
	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.	Spring.	Sum.	Aut.	Wint.	Year.
5	2.06	2.43	1.38	3.35	1.65	2.68	2.15	2.14	3.98	2.26	+.62	—.28	+.76	+.63	+.61
6	2.87	1.98	1.48	2.25	1.45	1.75	2.85	2.22	2.65	.99	—1.12	+.87	+.76	+.40	—.46
7	1.28	2.23	1.60	3.04	.88	1.61	3.59	1.67	3.60	.62	+.33	+1.36	+.07	+.56	—.26
	1.78	**1.56**	**1.25**	**2.15**	**1.18**	**2.05**	**1.82**	**1.61**	**2.68**	**1.32**	**+.27**	**+.26**	**+.36**	**+.53**	**+.14**
1	1.59	3.25	.35	1.45	.82	1.71	4.05	.51	2.23	.85	+.12	+.80	+ 16	+.78	+.03
2	.36	1.11	1.11	.24	.71	2.72	1.50	1.42	1.40	.92	+2.36	+.39	+.31	+1.16	+.21
3	1.50	2.44	1.58	1.97	1.28	1.35	3.46	1.92	2.86	1.46	—.15	+1.02	+.34	+.89	+.18
4	4.04	5.89	4.16	5.67	4.08	3.13	6.11	5.14	7.86	3.52	—.91	+.22	+.98	+2.19	—.56
	1.87	**3.17**	**1.80**	**2.33**	**1.72**	**2.23**	**3.78**	**2.25**	**3.59**	**1.69**	**+.36**	**+.61**	**+.45**	**+1.26**	**—.04**
1	1.08	1.12	1.09	.60	.86	.72	.41	.49	1.04	.33	—.36	—.71	—.60	+.44	—.53
2	1.25	2.31	.88	2.08	1.40	2.51	2.39	.96	2.00	1.68	+1.26	+.08	+.08	—.08	+.28
3	.83	.43	.39	.29	.34	1.27	.42	.16	.26	.40	+.44	—.01	—.23	—.03	+.06
4	1.35	1.51	.61	.77	.64	1.45	1.04	.65	1.24	.61	+.10	—.47	+.04	+.47	—.03
5	.73	1.87	1.18	.72	.50	1.12	1.10	1.00	.95	.53	+.39	—.77	—.18	+.23	+.03
6	1.28	.54	.38	.85	.26	2.78	.62	.14	1.12	.79	+1.50	+.08	—.24	+.27	+.53
7	1.01	.77	.60	.67	.53	1.00	.54	.71	.77	.17	—.01	—.23	+.11	+.10	—.36
8	1.21	1.54	1.65	1.46	1.22	1.44	1.49	2.17	2.63	1.63	+.23	—.05	+.52	+1.17	+.41
	1.09	**1.26**	**.85**	**.93**	**.72**	**1.53**	**1.00**	**.79**	**1.25**	**.77**	**+.44**	**—.26**	**—.06**	**+.32**	**+.05**
1	1.14	2.02	1.78	2.55	.35	1.43	2.37	2.27	2.08	.33	+.29	+.35	+.49	—.47	—.02
2	.20	1.18	1.46	1.19	.32	.34	1.20	1.84	.99	.24	+.14	+.02	+.38	—.20	—.08
3	1.15	.61	3.26	1.84	1.17	1.09	.84	4.06	2.28	1.45	—.06	+.23	+.80	+.44	+.28
	.83	**1.27**	**2.17**	**1.86**	**.61**	**.95**	**1.47**	**2.72**	**1.78**	**.67**	**+.12**	**+.20**	**+.56**	**—.08**	**+.06**
1	5.18	7.61	7.70	7.71	6.28	5.71	8.84	8.62	8.11	6.87	+.53	+1.23	+.92	+.40	+.59
2	2.75	.81	1.61	3.06	.79	2.54	.88	1.43	3.19	1.11	—.21	+.07	—.18	+.13	+.32
3	6.74	4.38	5.11	7.53	5.77	7.32	4.86	5.97	8.73	6.62	+.58	+.48	+.86	+1.20	+.85
4	2.06	3.01	......	......	......	2.12	3.13	......	......	......	+.06	+.12			
5	1.39	1.24	2.00	2.11	.59	2.09	2.14	3.36	1.63	1.08	+.70	+.90	+1.36	—.48	+.49
6	2.21	2.60	3.36	5.76	3.13	2.68	2.86	4.10	6.33	3.60	+.47	+.26	+.74	+.57	+.47
7	3.73	.32	12.83	8.93	6.03	6.89	.47	17.92	17.21	10.17	+3.16	+.15	+5.09	+8.28	+4.14
8	5.31	5.68	9.34	10.69	7.89	8.35	8.74	11.85	13.08	10.47	+3.04	+3.08	+2.51	+2.39	+2.58
9	6.67	14.15	3.89	6.65	5.25										

FORCES THAT DEFLECT THE CLOUD CURRENT OF THE ATMOSPHERE FROM ITS MEAN ANNUAL DIRECTION

THE annual direction of the upper current, as indicated by the motion of the clouds, shows—in the temperate zone—a great uniformity from the west. Of the resultants given in the following table four-fifths are from points between west by north and southwest. If those stations that lie within the limits of the polar and equatorial systems of winds are excluded, the uniformity is almost without an exception. The ratio, 42 per cent., is nearly double that of the surface current (23 per cent.), thus showing a steadiness of motion admitting of little monsoon influence. Accordingly we find, in the right-hand columns of the following table, that the deflecting forces are usually quite small; in fact, so small that a map constructed on the same plan and scale as Plates 10, 11 and 12, would not satisfactorily exhibit their direction or amount. For this reason they are collected in the accompanying table. The yearly resultants are prefixed for ready comparison.

Serial number.	Place of observation.	Resultant for the year.		Monsoon influences.							
				Spring.		Summer.		Autumn.		Winter.	
		Direction.	Ratio.	Direction.	Force.	Direction.	Force.	Direction.	Force.	Direction.	Force.
	Zone 6. Lat. 60° to 65°.										
8	Fort Simpson	N. 57° W.	.49	S. 27½° E.	.18?	S. 48½° W.	.40	S. 88° E.	.50?	N. 35° W.	.53?
	Zone 8. Lat. 50° to 55°.										
16	Red River Settlement	N. 83 W.	.12	S. 77 E.	.07	N. 51 W.	.11	S. 35½ E.	.11	N. 52 W.	.05
	Zone 9. Lat. 45° to 50°.										
12	Neeah Bay	S. 23 W.	.33	S. 44 E.	.20	S. 28 W.	.27	N. 83 W.	.21	N. 29 E.	.40
36	N. W. Montana	N. 63 W.	.30½	S. 3 W.	.16	N. 47½ E.	.09	N. 36½ W.	.09	N. 10½ W.	.03
37	Southern Montana	N. 86 W.	.53	S. 77 W.	.07	S. 74 W.	.01½	S. 32 E.	.07	N. 33 E.	.10
40	Eastern Dacotah	N. 64 W.	.26½	N. 72½ E.	.13½	S. 75 E.	.05	N. 55½ W.	.06	S. 65 W.	.14
47	Central Minnesota	N. 84 W.	.34	N. 28½ E.	.09	S. 59 W.	.19	S. 73 E.	.05	N. 64½ E.	.08
49	Eastern Minnesota	S. 86 W.	.22	N. 85 E.	.05	S. 67 W.	.14	S. 72½ W.	.40	N. 70 E.	.49
51	N. and N. E. Minnesota	N. 62 W.	.43	N. 51 E.	.12	S. 71½ W.	.14	N. 72½ E.	.02	S. 49 E.	.05
53	N. W. Wisconsin	N. 62 W.	.30	N. 59 E.	.16	S. 16 E.	05	S. 9½ W.	.01	S. 78½ W.	.16
55	Marquette, Michigan	N. 82 W.	.58½	N. 49 E.	.14	S. 15½ W.	·10	N. 43 E.	.05	S. 76 W.	.12
57	N. Michigan, west of 87°	N. 76 W.	.48	N. 61½ E.	.15	S. 16 E.	.08	S. 85 E.	.07	N. 85 W.	.22
58	Winnipeg	N. 78 W.	.22	N. 51 E.	.25	N. 86 W.	.13	S. 8 E.	.20	N. 47 W.	.04½
65	Northern Michigan, E. of 87°	S. 78 W.	.55	N 61 E.	.05	S. 19½ W.	.15	N. 8½ E.	.09	N. 6½ W.	.06
67	Montreal and St. Martin	N. 82 W.	.34	N. 23½ E.	.05	S. 3 W.	.10½	S. 9½ W.	.01	N. 10½ W.	.07
76	Central Maine	N. 71 W.	.14½	N. 65 E.	.32	S. 28½ E.	.28	N. 77 W.	.29	N. 73 W.	.14
82	St. John's, N. B.	N. 52 W.	.40	S. 65½ E.	.26	N. 22½ W.	.09	N. 78½ E.	.06	N. 89 W.	.26
84	Wolfville, Nova Scotia	S. 89 W.	.43	N. 62½ E.	.07	S. 18½ E.	.19	N. 61 W.	.05	N. 31 W.	.14
163	Georsdoff, France	S. 75 W.	.44	S. 59 E.	.16	S. 47 W.	.11	N. 89 W.	.03	N. 21 E.	.20
	Zone 10. Lat. 40° to 45°.										
28	Western Oregon	S. 86 W.	.68	S. 38½ W.	.03	N. 52½ E.	.11	S. 21½ W.	.04	S. 78½ W.	.06
48	N. Central Utah	S. 81 W.	.56	N. 49½ E.	.18	S. 9½ E.	.12	N. 51 W.	.15	S. 21 W.	.10
49	Fort Bridger	S. 68 E.	.54	S. 63 W.	.30	N. 65 E.	.42	N. 67 E.	.43	S. 67½ W.	.55
60	S. Central Dakotah	N. 36 W.	.27	S. 41 E.	.11	S. 49 E.	.15	N. 52½ W.	.17	N. 31 W.	.09

Serial number.	Place of observation.	Resultant for the year.		Monsoon influences.							
				Spring.		Summer.		Autumn.		Winter.	
		Direction.	Ratio.	Direction.	Force.	Direction.	Force.	Direction.	Force.	Direction.	Force.
	Zone 10.—*Continued.*										
75	S. W. Minnesota	N. 82° W.	.53	N. 62° E.	.10	S. 45½° E.	.17	S. 67° W.	.05	N. 60½° W.	.20
77	S. E. Minnesota	N. 89 W.	.50	N. 66½ E.	.06	S. 30 W.	.09	S. 36 W.	.01	N. 49 W.	.07
97	Eastern Wisconsin	N. 85 W.	.46	N. 56 E.	.11	S. 77 W.	.08	S. 1 W.	.04	S. 61 W.	.02
100	S. E. Wisconsin	N. 89 W.	.44	N. 15 E.	.06	S. 22 E.	.11	N. 80 W.	.05	N. 14 W.	.03
104	N. W. Illinois	S. 85 W.	.48	N. 49 W.	.05½	S. 54½ E.	.03	N. 75½ W.	.02	S. 61 E.	.05
102	W. Illinois, lat. 40° to 41°	S. 71 W.	.44½	N. 12 E.	.05½	S. 22 E.	.04	S. 30½ W.	.04	N. 76 W.	.05
107	N. E. Illinois	S. 86 W.	.45	.S 53½ E.	.05	S. 67 W.	.02	S. 58 E.	.02	S. 69 W.	.04
111	N. W. Indiana	S. 82 W.	.44	S. 79 E.	.08	N. 89 W.	.07	N. 82 W.	.02	N. 53 E.	.02
109	E. Illinois	S. 81 W.	.37	S. 62½ E.	.06½	S. 72 E.	.12	N. 65 W.	.16	S. 89 W.	.03
114	N. E. Indiana	S. 83 W.	.44	S. 73 E.	.05	S. 66 W.	.03	S. 2½ E.	.00½	N. 42 W.	.04
116	S. W. Michigan	S. 85 W.	.36	S. 73 E.	.01	N. 65½ W.	.07	S. 78½ E.	.03½	S. 44 E.	.03
118	Michigan, lat. 43° to 45°	S. 86 W.	.38½	S. 50½ E.	.03½	S. 83 E.	.07	N. 78½ W.	.08	N. 56 W.	.03
123	S. E. Michigan	N. 83 W.	.35½	N. 43 E.	.10	S. 50 W.	.05	S. 23 W.	.03	S. 56½ W.	.02
125	N. W. Ohio	S. 81 W.	.50½	N. 53 E.	.04	S. 8½ W.	.04	N. 5½ E.	.03	S. 71 W.	.03
129	N. E. Ohio	S. 88 W.	.51½	S. 44 E.	.02	N. 60 W.	.04	N. 40 E.	.04	S. 5½ W.	.04
132	Toronto, Canada	N. 79 W.	.35	S. 50 W.	.03	N. 52 E.	.04	S. 87 W.	.06	N. 89 W.	.05
138	N. W. Pennsylvania	S. 86 W.	.67½	N. 84 E.	.11	N. 67 W.	.06	N. 3½ E.	.02	S. 45 W.	.08
144	W. Pennsylvania	S. 87 W.	.50	N. 64½ W.	.00½	N. 24 E.	.01½	S. 29½ E.	.03	N. 60½ W.	.03
160	W. New York	S. 84 W.	.57½	N. 65 E.	.03½	N. 63 E.	.01	N. 66½ W.	.00½	S. 56 W.	.03
196	Eastern Pennsylvania	N. 82 W.	.45½	N. 53 E.	.05	S. 4½ W	.08	South.	.03	N. 23 W.	.09
209	N. E. New York	S. 81 W.	.52	N. 49 E.	.04	S. 58 W.	.09	N. 52 W.	.01	N. 75 E.	.07
227	Eastern New York	S. 49 W.	.59	S. 55 E.	.05	S. 46 W.	.05	N. 27 E.	.04	N. 51 W.	.04
243	S. E. New York	S. 77 W.	.48	N. 9 E.	.03	S. 47 E.	.08	S. 54 E.	.03	N. 62 W.	.10
260	W. Massachusetts	N. 83 W.	.40½	N. 42 E.	.10	S. 17½ W.	.14	S. 45 W.	.02	N. 14½ W.	.08
277	N. New Hampshire	N. 83 W.	.57	N. 57 E.	.05	S. 33 E.	.05	S. 74 W.	.05	N. 52 W.	.05
281	S. New Hampshire	N. 82 W.	.40½	N. 57 E.	.04	S. 12½ E.	.14	S. 8 E.	.04	N. 27 W.	.17
289	Rhode Island	S. 88 W.	.14½	N. 2½ W.	.01	S. 15 W.	.14	N. 83 E.	.08	N. 13½ W.	.12
296	N. E. Massachusetts	N. 79 W.	.38	N. 75 E.	.09	S. 2 W.	.09	S. 37½ W.	.03	N. 41 W.	.11
300	S. E. Massachusetts	N. 87 W.	.37½	N. 65 E.	.06	S. 1½ E.	.07	S. 57 E.	.03	N. 8 W.	.06
309	S. W. Maine	N. 82 W.	.43	N. 40 E.	.07	S. 8 W.	.12	S. 37 E.	.06	N. 31 W.	.12
311	S. Maine	N. 79 W.	.41	N. 17 E.	.06	S. 12 W.	.10	S. 24 E.	.04	N. 14 W.	.08
314	S. E. Maine	N. 84 W.	.44	N. 50 E.	.11	S. 33 W.	.09	S. 6 W.	.06	N. 31 W.	.07
	Zone 11. Lat. 35° to 40°.										
15	California, long. 120°–122° W.	S. 51 W.	.52½	S. 10 E.	.05	N. 22 E.	.15	S. 8 W.	.09	N. 87 W.	.04
19	California, long. 121 –122 W.	S. 45 W.	.49	S. 38 E.	.02½	S. 27 E.	.08½	S. 38 W.	.10	N. 1 E.	.17
26	California, long. 121 –123 W.	S. 73 W.	.60	N. 83 W.	.10	N. 56 E.	.04	S. 66 W.	.07	S. 86 E.	.13
28	Monterey, Cal	S. 84 W.	.69½	N. 3 W.	.06	N. 25 W.	.04	S. 17 W.	.03	S. 17 E.	.08
37	Southwestern Utah	S. 41 E.	.16	S. 76 W.	.12	S. 6½ E.	.18	N. 42 E.	.11	N. 15 E.	.12
41	Camp Plummer & Ft. Lowell	S. 54 E.	.16	S. 63 W.	.21	N. 51½ W.	.14	N. 66 E.	.28	S. 15 E.	.11
62	Fort Hays	S. 63 E.	.25	S. 27 W.	.17½	N. 85 W.	.31	N. 85 E.	.08	N. 67 E.	.33
64	Western Central Kansas	S. 45 E.	.07	S. 23 E.	.24	S. 73 W.	.14	N. 22 E.	.19	N. 15 W.	.10
67	Northeastern Indian Territory	S. 70 W.	.34½	N. 84 W.	.21	N. 86 W.	.02	S. 66 E.	.22	N. 21 E.	.06½
69	Eastern Central Kansas	S. 85 W.	.26	N. 29 W.	.12	S. 19 E.	.15	N. 86½ E.	.01	N. 3 E.	.04
71	Northeastern Kansas	S. 86 W.	.36½	N. 24 W.	.05	S. 14 W.	.13	S. 22 W.	.01	N. 38 E.	.11
72	Eastern Kansas	S. 80 W.	.29	N. 59 W.	.03	S. 22½ E.	.16	N. 39 W.	.08	N. 23 E.	.07½
78	Northwestern Arkansas	S. 55 W.	.39	S. 4 W.	.23	N. 8 W.	.07	N. 58 E.	.19	N. 70 W.	.15
79	Northeastern Arkansas	N. 88 W.	.34½	S. 55 W.	.36	S. 74 E.	.24	S. 26 W.	.08	N. 18½ E.	.36
81	Southwestern Missouri	S. 51 W.	.36½	S. 52 W.	.17	N. 76½ E.	.10	S. 84½ E.	.11	N. 43 W.	.12
87	Eastern Missouri	S. 88 W.	.52	S. 35 W.	.04	N. 63½ E.	.04	S. 24 E.	.02	N. 27 W.	.04
89	Southeastern Missouri	S. 80 W.	.43½	N. 38 W.	.11	S. 77 E.	.04	S. 9 E.	.06	S. 32 E.	.04
91	Southwestern Illinois	S. 84 W.	.38	N. 1 W.	.04	S. 29 E.	.02	S. 21 W.	.02	S. 44 E.	.01
93	Southeastern Illinois	S. 80 W.	.65½	West.	.06	N. 59 E.	.07	N. 79½ E.	.00½	S. 18 W.	.05
95	Western Tennessee	S. 65 W.	.46	S. 71 W.	.06	N. 8 E.	.11	S. 79 E.	.17	S. 62½ W.	.14
97	Western Kentucky	S. 78 W.	.51	S. 24 W.	.02½	N. 31 W.	.13	S. 68 E.	.11	S. 31 W.	.06
101	Southeastern Indiana	S. 87 W.	.56	S. 73½ E.	.04	N. 11 W.	.04	S. 22 W.	.03	S. 70 W.	.02
104	Middle Tennessee	S. 82 W.	.60½	N. 83 W.	.05	N. 65½ E.	.09	S. 29 E.	.02	S. 53 W.	.05
105	Newport Barracks	N. 77 W.	.50	N. 89½ E.	.19	S. 12½ W.	.15	S. 74 W.	.16	N. 5 E.	.16
107	Northern and Cent. Kentucky	S. 74 W.	.61	N. 55 W.	.09	N. 37 E.	.04	S. 74 E.	.04	S. 67 W.	.07
109	Southwestern Ohio	S. 84 W.	.58	N. 73 E.	.04½	N. 66½ W.	.03	N. 87 W.	.03	S. 39 E.	.04
110	Northeastern Kentucky	S. 78 W.	.53	S. 2 W.	.00½	N. 60½ W.	.10	S. 56 E.	.03	S. 67 E.	.07
112	Eastern Tennessee	S. 67 W.	.59	N. 77 W.	.05	S. 80 E.	.07	N. 54½ E.	.11	S. 59 W.	.12
115	Southeastern Ohio	S. 78 W.	.64	None	.00	N. 37½ E.	.02	S. 78½ E.	.01	S. 42½ W.	.01½
117	Northwestern Virginia	S. 74 W.	.45	N. 53 W.	.06	S. 84 E.	.06	S. 70 E.	.07	S. 84 W.	.08
124	Middle North Carolina	S. 56 W.	.40	S. 31 E.	.01	S. 48 W.	.03	N. 35 E.	.08	S. 49 W.	.06

Serial number.	Place of observation.	Resultant for the year.		Monsoon influences.							
				Spring.		Summer.		Autumn.		Winter.	
		Direction.	Ratio.	Direction.	Force.	Direction.	Force.	Direction.	Force.	Direction.	Force.
	Zone 11.—*Continued.*										
127	Southern Pennsylvania........	S. 87° W.	.63	N. 60° E.	.01	S. 89° E.	.06	S. 74° E.	.03	N. 88° W.	.11
131	Northern Maryland............	N. 87 W.	.57½	N. 66 E.	.01½	S. 62 E.	.05	S. 69 E.	.03	N. 70 W.	.08
138	Dist. of Columbia and S. Md.	S. 68 W.	.58	N. 75 E.	.06	S. 64 E.	.03	S. 26½ W.	.05	N. 60 W.	.08
143	Southeastern Virginia..........	S. 82 W.	.52	N. 65 W.	.02	S. 25 E.	.03	N. 68½ E.	.09	S. 82 W.	.07
145	Eastern North Carolina........	N. 87 W.	.43	N. 86½ W.	.09	S. 74 E.	.08	S. 84 E.	.12½	N. 73½ W.	.11
151	Southeastern Pennsylvania...	N. 89 W.	.53	N. 78 E.	.24	S. 2 E.	.06	S. 32 W.	.06	N. 72½ W.	.22
154	Southern New Jersey...........	N. 88 W.	.39	N. 23½ E.	.03½	S. 31 E.	.13	N. 38½ E.	.03	N. 57 W.	.10
	Zone 12. Lat. 30° to 35°N.										
37	New Mexico, Southern Cent.	S. 63 W.	.27½	N. 70 E.	.07	S. 23 E.	.13	S. 23 W.	.15	N. 10 W.	.24
72	Texas, lat. 30–1°, long. 95–7°	S. 3 W.	.27	S. 40 W.	.07	S. 31 E.	.24	N. 17 E.	.07	N. 21 W.	.26
81	Arkansas, lat. 34° to 35°......	S. 75 W.	.59	S. 14½ W.	.11	S. 56 E.	.18	N. 69½ W.	.16	N. 11 W.	16
85	Northwestern Louisiana.......	S. 51 W.	.45	S. 44½ E.	.28	S. 14 W.	.32	N. 11 W.	.30	N. 11 W.	.22
87	Northeastern Louisiana........	S. 53 W.	.31½	S. 45 W.	.16	S. 89½ E.	.15	N. 16 E.	.10	N. 69 W.	.06
94	Mississippi, lat. 34° to 35°...	S. 57 W.	.32½	N. 51 W.	.22	S. 17 E.	.13	S. 43 E.	.10	N. 46½ E.	.08
96	Mississippi, lat. 32 to 34 ...	S. 74 W.	.46	N. 85 W.	.16	N. 74 E.	.21	N. 68 E.	.05	S. 47 W.	.13
99	Mississippi, lat. 32 to 33 ...	S. 43 W.	.25	S. 48 W.	.12	N. 66½ E.	.13	N. 56½ E.	.14	S. 72½ W.	.15
102	Mississippi, lat. 31 to 32 ...	S. 55 W.	.32½	N. 57½ W.	.25	N. 72 E.	.31	N. 54 E.	.05	N. 86 W.	.13
108	Alabama, lat. 34 to 35 ...	N. 37 E.	.23	N. 36 W.	.07	S. 71 E.	.26	N. 50 W.	.19	S. 32 W.	.12
138	S. Carolina, lat. 34 to 35 ...	N. 80 W.	.52	West	.04	S. 74 E.	.05	S. 87 E.	.08	N. 81 W.	.09
141	S. Carolina, lat. 33 to 34 ...	S. 79 W.	.44½	S. 83 W.	.08	N. 89 E.	.06	N. 60 E.	.16	S. 59 W.	.13
	Zone 13. Lat. 25° to 30° N.										
29	Southeastern Louisiana........	S. 54 W.	.25	S. 49 W.	.23	N. 64 E.	.28½	N. 41 W.	.04	S. 86 E.	.05
30	New Orleans, years 1854–57...	S. 57 W.	.27	S. 55 W.	.29	N. 69 E.	.27	N. 12 E.	.08	S. 83 W.	.02
	Zone 14. Lat. 20° to 25°N.										
14	Florida Keys......................	N. 84 W.	.15½	S. 85 W.	.10	S. 72 W.	.24	S. 11 W.	.10	N. 60 E.	.20
	Zone 15. Lat. 15° to 20° N.										
6	City of Mexico, 1856..........	N. 45 E.	.27	N. 69 E.	.25	N. 71 W.	.03	N. 61 W.	.43	S. 29 E.	.36
9	Mirador..............................	S. 59 E.	.31	S. 35 W.	.25	N. 45 E.	.21	N. 21 E.	.19	S. 27 W.	.14
12	Tehuantepec......................	N. 56 E.	.51½	N. 75 W.	.27	S. 50 E.	.40	N. 23 W.	.19	N. 74 E.	.02
18	West Indies.......................	East	.43	N. 27 E.	.10	S. 67 E.	.36	N. 33 W.	.03	N. ½ E.	.37

DISCUSSION AND ANALYSIS

OF

PROFESSOR COFFIN'S TABLES AND CHARTS

OF THE

WINDS OF THE GLOBE.

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DISCUSSION AND ANALYSIS OF WINDS.

THE aim of Prof. Coffin in this work on the "Winds of the Globe," the reason why he did not write the text, and how I came to take charge of this part of it, has been already explained in the preface.

In what way the ideas of the deceased author would have been modified by the progress of theoretical meteorology in the last twenty years, as well as by the much more extended knowledge of facts we possess now, it is impossible to say. It is very likely, however, that he would have continued to rely principally on the inductive method, would have avoided hasty generalizations, and would have shown the same caution and candor as in his other works, omitting explanations of what our present knowledge did not give sufficient data, rather than mislead his readers.

Before drawing the conclusions which seem to follow from the tables and maps of this work, some explanations are necessary.

The object of this work is to ascertain the movement of the air over different parts of the earth's surface. For this purpose the mean direction and rate of progress of the wind were calculated according to the formula of Lambert. It is easy to see that to accomplish this with precision, we should know the velocity of the wind at all places at which calculations are to be made. Now we know the velocity of the winds in a somewhat accurate manner only for a very small number of stations. For many more the velocity of the wind was merely estimated, and for a majority of places, the direction of the wind alone is known. Now the progressive movement of the air over a certain place, even taking into account the direction only, without considering the number of miles travelled, can be ascertained from the number of observations alone if we make the supposition that all winds have the same velocity; but this is obviously not the case. In nearly all known instances where the velocity of the winds has been ascertained, it has been found to vary considerably; generally, the more accurate observations with self-registering anemometers give a greater difference between the velocities belonging to different directions of the winds than mere estimates have given, the difference being seldom less than 1 to 2, and sometimes even 1 to 4 or 1 to 5.

In considering attentively the observations for the stations where the number of observations, for hours, and the velocity are given, it is seen that generally the most frequent wind is also the strongest, or, comparing the mean direction of the wind calculated from the number of observations only, with that obtained by

taking into account the velocity of the winds, it will be found that in the last case the mean direction generally approaches nearer to the actual direction of the prevailing wind.

Besides it is seen that generally the ratio of resultant is greater in the second case than in the first.

Thus it follows that, when we have the mean direction of the wind at a given place, calculated from the number of observations only, we may infer that, if the velocity was known, it would modify the result in so far as to make the mean direction nearer to that of the prevailing wind, and the ratio of resultant greater.

Unfortunately most of the above deductions apply only to the United States, as it was the only country for which Prof. Coffin made his calculations from the original journals. As to printed meteorological journals, they were very scarce until within a late period, and many of these were not to be had in the United States. Therefore published means and abstracts had to be relied upon, and these gave only the number of observations for each wind. It might be thought that the results of the self-registering anemometers now in use in so many meteorological stations would give abundant material for the answer to this question, but, owing to the recent introduction of these instruments in some cases, and to discontinuity of record in others, comparatively few tabulated records of velocity of winds have been printed.

Yet it seems that the angle between the mean direction calculated, taking into account the number of observations only, and that in which the velocity is considered, seldom exceeds 15°. In case of a very small ratio of resultant it can be much greater, but this small ratio itself shows that the mean direction is not much to be relied upon.

All this leads to the conclusion that it is possible to calculate the mean direction of the wind from the number of observations only without incurring a large error. The map, Plate 13, shows the resultant direction for the number of observations only, as also for velocity, in the United States. I must also explain in what sense I use the words "polar" and "equatorial" winds. Polar designates a wind blowing from a higher latitude towards a lower; and equatorial, a wind blowing from a lower towards a higher latitude. I use these terms in the way which is most generally admitted, to avoid confusion. This agrees also with the manner in which winds are generally designated, so far as we call north wind one that blows from the north towards the south, and not *vice versa*.

It will be remembered that in the "Winds of the Northern Hemisphere" Prof. Coffin used the words "polar" and "equatorial" in the opposite sense.

Another question, to my mind, more difficult to answer, is as to the value of the observations on the motion of clouds. They may serve two ends: 1, to ascertain the motion of an upper current of the air; 2, to observe the lower current, free from the irregularities often found immediately above the surface of the earth.

Naturally enough, in this case all depends on the height of the clouds observed. Very seldom, if ever, in discussing observations from a journal, can even the approximate height of the clouds observed be ascertained. This alone detracts very much from the value of such observations. Besides this, the cases must be taken into account when there were no clouds, or, the clouds being very high, no

appreciable movement could be observed. All this lessens the value of the observations on motion of clouds.

Generally it is seen, that the clouds move from the same direction as the air near the surface of the earth, which would lead to the conclusion that the lower strata of clouds were those observed.

As to the higher clouds, the *cirri*, as far as known, they move generally from the west, except in the polar regions.

Considering all this, as well as the fact that the motion of clouds is recorded in this work for very few places outside of the United States, I shall not consider the subject in the further deductions, leaving to every one interested to draw his own conclusions from the tables and the map, Plate 1.

The most important works in meteorological science in the last twenty-two years are devoted to the proof of the mutual dependence of atmospheric pressure and winds.

It has for a long time been admitted that in the belts of the trade-winds the air moves from the regions where pressure is high (the polar limits of the trades) towards the low pressure of the equatorial regions. The phenomena here were so simple and regular that the explanation was very easy. In the case of the tropical hurricanes it was also generally admitted that the wind blew towards the low pressure in the centre of the storms. The meteorological phenomena of the temperate and polar regions are much more complicated, and the causes of them less easily detected.

It was Prof. Buys-Ballot who proved the general dependence of the winds on the pressure of the air. In its original enunciation, his celebrated *law of the winds* declares that the winds will blow from the region where the barometer is above the mean towards that where it is below, and will be deflected 60° to 80° towards the right, owing to the rotation of the earth. He subjected this law to a severe practical test in using it in the system for prediction of storms which had been established at that time in the Netherlands. Buys-Ballot's law of the winds is now very generally accepted, though in a somewhat modified form, viz.: *the wind blows from a region of high pressure towards one of low pressure, and is deflected to the right owing to the rotation of the earth.* In 1853, Prof. Coffin arrived at a very similar conclusion, saying, "that in the northern hemisphere a wind arriving from its mean direction always finds the point of maximum pressure on its left, and the minimum to its right; while the reverse is true in the southern hemisphere. There seem to be no exceptions to this law." He further states (*Proceedings of American Association*, 1853, p. 88) that the deflection in this case is 65°; that is, very near to that found by Dr. Buys-Ballot. Even before Professor Coffin, Espy expressed similar views, as seen in his "Philosophy of Storms" and "Meteorological Reports." Very likely the views of the American meteorologists were too much in advance of their time to be generally accepted. When Dr. Buys-Ballot published his law of the winds, meteorology had made much more progress, so as to render such views more easy of acceptance.

This law applies to storms as well as gentle winds, to single hours of observations as well as to monthly and yearly means.

Buchan has rendered a great service to meteorology by extending Buys-Ballot's law to the general phenomena of the winds of the globe. He collected a great deal of information as to the mean pressure of the air, and drew *isobaric lines*, *i. e.*, lines of equal pressure of the air reduced to sea-level, and by considering the prevailing winds he proved that they generally followed Buys-Ballot's law. As this work, "Mean Pressure and Prevailing Winds of the Globe," is very important in the discussion of the winds, I make the following extracts from it:—

"*Distribution of Atmospheric Pressure in December, January, and February.*

"In these months the highest pressures are grouped over the land of the Northern Hemisphere, and the larger the extent of land, the greater the pressure. The area of high barometer (thirty inches and upwards) embraces nearly all of Asia, all Europe south of the North and Baltic Seas, the North Atlantic between 15°–45° N., the West Indies, North America except the North and Northwest, and the Northern Pacific between 8° and 24° N. There are also two regions of high pressure of comparatively small extent, the one in the South Atlantic, the other in the South Pacific.

"The regions of low pressure are: the northern part of the North Atlantic and North Pacific, including portions of the continent adjoining; the belt of low pressure in the equatorial region, towards which the trade-winds blow, and the remarkable depression in the Antarctic region which is probably subject to little change throughout the year.

"In *March* the pressure diminishes over Asia, the middle and south of Europe and the United States. Everywhere else except in the tropics it is rising. This rise of pressure is most apparent in the temperate regions of the southern hemisphere. In the north of the Atlantic it is rapidly rising, the average pressure in Iceland now being 29.609 inches, thus showing an increase of 0.34 inch in comparison with January.

"In *April*, the heavy lines indicating a pressure above the average have all but left Asia, Europe, and the United States, and the isobars of 30 inches bound a belt of high pressure, which completely encircles the globe in the south temperate zone. Pressure continues to rise in the north of the Atlantic, and to the north of North America. And it is probable that a space of high pressure (at least 30 inches) completely encircles the north pole. In this month pressure is more equally distributed than in any other month; for, except the Antarctic Ocean, it scarcely rises anywhere above 30.1 inches nor falls below 29.8. In May, in North Europe, in Greenland, and in the north of North America, pressure attains the maximum of the year. Pressure continues to increase in the south temperate zone, and the isobar of 30.1 now nearly encircles the globe. At this time the highest pressure in the southern hemisphere occurs in the S. E. of Australia, where, at Deniliquin, it is 30.185 inches. Pressure is rapidly falling over Asia and the United States.

"In June, July and August, pressure falls in the central regions of Asia to about 29.5. In this season this diminution of pressure, which may be regarded as entirely

determining the summer climate of Asia, reaches its lowest point. Pressure falls also in the interior of North America, where, at Salt Lake City, it is only 29.7 inches. The annual maximum of the south temperate zone is attained in these months. The isobar of 30.1 goes entirely round the globe, and a still higher pressure prevails over South Africa, and the portions of the ocean immediately to the west and east of it. In these months the arrangement of the isobars may be regarded as being, generally speaking, reversed from that of December, January and February, and in this respect a comparison of these two groups of months is very instructive.

"From this period, pressures increase over the continents of the northern hemisphere, and diminish over the south temperate zone, till the distribution of pressure is regained which has been shown to prevail during the winter months.

"In *September* and *October* an interesting feature of these lines is a very rapid diminution of pressure, indicated as taking place in the north of the Atlantic and surrounding regions. This is the season of the year when the first great decrease of temperature takes place, which is accompanied by heavy rains and furious storms. The increase of pressure in Sweden in October, taken in connection with the simultaneous decrease in Greenland, Iceland, the north of Norway, and the British Islands, is interesting as bearing on the transport of masses of the atmosphere from one region into another.

"In November, pressure rises considerably over the continents of the northern hemisphere, and falls in the south temperate zone. And the belt of low pressure in the equatorial regions may be regarded as passing completely around the globe. This belt, towards which the trades on each side of the equator blow, does not occur in the summer months in the Indian Ocean; but, on the contrary, there is a continuous diminution of pressure northward, from Australia and Mauritius to the interior of Asia. It will be seen that in November, as compared with October, the isobars have advanced a little northward from the British Islands to Iceland, and eastward from Baffin's Bay to Iceland, thus indicating a general increase of pressure over the north of the Atlantic and regions adjoining. Coincident with this increase of pressure, there occurs a diminution of pressure to the southeast of it, including Austria, Italy, and countries adjoining the Mediterranean; and in the Atlantic to the south of it, from about latitude 15°–45° N. Probably these extensive oscillations of pressure are part of a general movement of the atmosphere, which, in one of its manifestations, has been generally known to meteorologists as the great November wave, but of which no very satisfactory account has yet been given." (Buchan, p. 577–579.)

WINDS *within, or near, a space of Low Pressure.*—"Of this class, the best example is the low pressure which prevails in the north of the Atlantic and adjoining regions in the winter months. This region of low pressure is bounded to the S. W. by the high pressure of North America, to the S. by the high pressure in the Atlantic, about 30° lat. N., to the S. E. by the high pressure in the interior of Asia. In January, the difference between the average pressure of Iceland and the interior of Asia is fully an inch."

"It is seen from the charts that in Baffin's Bay and east of the Rocky Mountains,

as far south as 40° lat., the winds are N. N. W., N. W., and W. N. W. Crossing the Atlantic, winds in the British Islands, in France, and the north of Germany, from the W. S. W. to S. W.; in Denmark, S. S. W.; near Bergen, in Norway, S.; and at Christiansund and Hammerfest, S. S. E. The relation of these winds to the isobaric lines is the same as that which is illustrated by the winds in storms, in their relation to the isobaric lines of these storms. This has been already stated in a paper by the author, published in the *Transactions of the Royal Society of Edinburgh*, Vol. XXIV. Part I. p. 201, in the following words: 'The wind in storms neither blows round the centre of least pressure in circles, or as tangents to the concentric isobaric curves, nor does it blow directly towards that centre. It takes a direction intermediate, approaching, however, more nearly to the direction and course of the circular curves than of the radii to the centre.' Or, according to Dr. BUYS-BALLOT, the angle is not a right angle, but from about 60° 80°. This relation is usually called 'BUYS-BALLOT'S LAW OF THE WINDS.'[1]

"Another well-marked depression is the low summer pressure in the interior of Asia; with reference to which it is seen from the charts that the winds of Eastern Europe and Western Asia are from N. W. to W. N. W. and W.; at Ceylon, S. W.; at Shanghai, S. E.; and on the Sea of Okhotsk, N. E.; whilst in the interior, calms generally prevail."

"The behavior of the winds, as regards the low pressure of North America, is exactly similar to that of the winds in Asia at this season. In all these cases the wind appears to flow round and in upon the space where pressures are low. Even in those instances where the depression over a limited space is comparatively small, such as in Australia during the summer months, the winds observe the same course with respect to it."

"A well-known and remarkable diminution of pressure is that of the Antarctic regions; and though, except in Tasmania and the south of New Zealand, observations are wanting at particular points for a sufficiently long time to give good averages, yet the concurrent testimony of sailors and the inhabitants of these regions all goes to show that, at least on the outskirts of the region, winds are chiefly N. W. or W. N. W.—that is, they appear to flow in upon the space of low pressure. The low pressure in the equatorial regions, towards which the trades blow, is an illustration of the same principle."

"WINDS *within, or near, a space of High Pressure.*—The most prominent illustration of this is the high pressure in the interior of Asia in winter. It is seen from a single glance at the charts that the winds flow *out of* this space in every direction. The same *outflow* is seen with respect to the less strongly marked, but still very distinct space of high pressure in North America; owing to the large number of stations available here, this principle is amply illustrated.

"The next most noteworthy area of high pressure occurs in summer between Africa and North America, out of which also the charts show the winds blowing in all directions towards and round upon the surrounding low pressures."

"The following mean pressures, in inches, at 32° and sea-level, occur in Australia in June: At Brisbane, Queensland, 30.062; Sydney, 30.116; Melbourne, 30.178; Adelaide, 30.132; Freemantle, 30.121; and at Deniliquin, in the interior, on a

[1] For Prof. Coffin's determination of this angle, as 65°, see page xxv.

branch of the Murray River, 30.217. Hence a higher pressure occurs at this season (winter) in the interior, and it may be inferred that it is greatest in the southern portion of the interior. The prevailing winds are these: At Brisbane, S. S. W.; Sydney, W. by N. W.; Melbourne, N.; Adelaide, N. E. by N.; Freemantle, N. E. by E.; in other words, the winds blow out from this space of high pressure."

"This behavior of the winds with respect to spaces of high pressure differs in no respect from what occurs on particular days on which the isobaric lines present the same conditions of pressure. Mr. FRANCIS GALTON first drew attention to this peculiarity, under the name of *Anticyclones*, by which name he intended to convey the idea that in cases of high pressure occurring over a limited area, the course of the winds is exactly the reverse of what is seen to prevail in cyclones in which the winds blow round and in upon a space of low pressure."

"The *outflow* of the air from a region of high pressure, and the *inflow* upon a region of low pressure, appear to be reducible to a single principle, viz., the principle of gravitation. Given as observed facts the differences of pressure, it might almost be predicted, before calculating the averages, what the prevailing winds are. Indeed, so predominating is the influence of gravitation, that it may be regarded as the sole force immediately concerned in determining the movements of the atmosphere. If there be any other force or forces which set the winds in motion, their influence must be altogether insignificant as compared with gravitation." (Buchan, p. 581 to 583.)

This last passage of Buchan may be more distinctly expressed: in the action of gravity in restoring the equilibrium disturbed by unequal temperature. With a uniform temperature over the whole earth, there would be no wind. In illustration of the dependence of the wind on the difference of pressure, the map of isobars, Plate 14, as well as Plates 2, 4, 5, 6, and others, should be consulted.

Having given the above examples of the manner in which the winds are affected by atmospheric pressure, it is necessary to account for the origin of areas of high pressure, out of which, it is seen, the winds flow.

It must be said that this question is one of the most difficult in meteorology, and far from having received an entire solution.

As the tropical regions present the meteorological phenomena in the simplest form, it is best to begin with them. It has been known for a long time, that above the lower current of the air of the trade winds, flowing in the lower latitudes of the northern hemisphere from N. E. or E. N. E., there exists an upper one from about W. S. W. The existence of this current was proved by the movement of the highest (cirri) clouds always from some westward point, from the strong westerly winds on high mountains in the trade-wind region (the Chimborazo and others in equatorial South America, the peak of Teneriffe, etc.), from the transport eastward of ashes from the eruption of the volcanoes on the island of St. Vincent, (West Indies), and Cosiguina (Central America), and also from the direction of the smoke of very high volcanoes of the tropics. The supposition was then made, that there was a powerful ascending current over the belt of calms and rains near the equator, and that the air thus ascended flowed in the upper regions of the

atmosphere, in a direction contrary to the trade-winds, towards the polar limits of the latter, or to about 30° N. lat. and descended there.

Then the same principle was extended to dry, hot continental areas, where a powerful ascending current must exist on account of the heating by the sun, and this was proved by the great decrease of pressure in summer time.

Buchan extended the idea af ascending and descending currents further, supposing there was an ascending current over every area of low barometer, not only near the equator and on warm continental areas, but also in high latitudes, as on the North Atlantic, the North Pacific, etc. This air, he supposed, descended over areas of high pressure, as for example those existing in winter in Northern Asia and North America. Thus the supposition is, that the air flowing out of areas of high barometers, to a certain extent, comes from above, and again where the barometer is low, air ascends and flows in the higher strata, towards areas of high pressure.

I must repeat here, that this is a supposition, though a very plausible one, and that the actual facts which would prove the existence of such upper currents, with the exception of the so-called *counter-trades* in the region of the trade-winds, are very scarce. To these principles I would refer the direction of the wind at Dodabetta in the Neilghiris, in Southern India (above 8000 feet), which is nearly opposite to that observed in the lower strata in Central India, being from the N. W. in summer, that is, from the heated regions of the Punjab, where pressure is very low. In the lower regions, the winds on the contrary are S. E. and S., that is, the air is flowing towards Punjab. Another remarkable fact is the strong, constant, and warm W. wind observed in winter on some mountains near Lake Baikal. At that time of the year, the air is generally calm in lower regions, the cold intense, and pressure high. This west wind of the higher regions would thus seem to be a compensating current, flowing perhaps from Iceland towards the region of highest pressure of Eastern Siberia.

The observations on two of the highest peaks of the Rocky Mountains, above 14,000 feet, have failed to show an upper current of air blowing in a direction different from the lower one. As we have said before, our information as to upper currents is very scanty, and thus great caution seems yet necessary in drawing conclusions.

On the other hand, the influence of pressure on the winds near the surface of the earth is so well authenticated and reliable that we need not hesitate to base further conclusions on it.

The greater part of the earth being covered with water, we can first consider what would be the case if there were no intervening continents. What in this case would be the normal arrangement of pressure on the oceans? A belt of low pressure near the equator, a belt of high pressure at about 30° north and south, and a belt of low pressure about from 60° to 65°, after which the pressure would rise again towards the pole. This gives us three systems of winds at the surface of the earth, easterly (polar) in the lowest latitudes, westerly (equatorial) in the middle latitudes, and again polar in the highest latitudes, in each hemisphere. A

reference to the maps shows that, in the main, such is the actual arrangement of pressures on the oceans and on parts of the continents.

It is easy to see that this is the general conclusion arrived at by Prof. Coffin in his "Winds of the Northern Hemisphere." The main result is thus the same, the study of the winds, alone having shown that this is the case in a great part of the globe, while what we have said as to the pressure of the air shows at least the proximate cause of the prevailing winds. In how far this normal arrangement of winds is disturbed by geographical features, especially by the influence of the continents, will be shown later.

A further condition is the yearly movements of the belts of high and low pressure with the change of seasons. When the sun is in the zenith over the northern hemisphere, the seas under it will be more heated than the southern seas, and the equatorial belt of low pressure, which is also on the seas, the belt of highest temperature, will move northward. Owing to the great specific heat of the water, and consequently to the longer time it takes to cool, this northward movement will continue nearly to the end of the summer. On the other hand, the belt of low pressure in the higher latitudes will also move northward as the temperature rises near the poles, and the storm-tracks can take a more northerly course. The belt of highest pressure between the two of lowest must also take a more northerly position, as the air flows both north and south out from it. There can be no doubt that it holds an intermediate position between the two.

When the sun is in the zenith over the southern hemisphere, the reverse takes place: the equatorial belt of lowest pressure recedes southward, and also that in higher latitudes of the northern hemisphere, as the polar regions are so much cooled that the condensation of vapor there cannot sustain great barometric depressions. These normal or ideal conditions are realized to some extent on the surface of the present oceans, and are the more striking, the larger the bodies of water are. Generally the southern hemisphere has meteorological conditions which approach more nearly to the normal conditions than the northern. Thus, it will be seen by reference to the map of the isobars that the high pressure in about 30° really encircles the globe in the southern hemisphere, while in the northern, the pressure is highest in January at about latitude from 50° to 53° N. in Asia, and in July the pressure is very low, about 30° L. N. on the same continent. Again the low pressure about from 60° to 65° encircles the globe in the southern hemisphere, the difference of pressure under the different meridians not being great, and further south (especially from 70° to 78°) somewhat higher pressure and easterly winds are found. In the northern hemisphere, on the contrary, the lowest pressure is found on two elliptical spaces, in the Northern Atlantic, about Iceland, and in the Northern Pacific, about the Aleutian Islands, that is, where a great extent of water prevails at about 60°, and the ocean is abnormally heated by currents of warm water.

We thus see that at a distance from the influence of water, the above-stated normal conditions are very much interfered with.

If the earth consisted mainly of continents without intervening oceans, very different conditions would prevail. As continents are more rapidly heated than oceans, temperature would be highest very soon after the passage of the sun

through the zenith of a parallel. The greatest heat in our summer would be about the Tropic of Cancer, in our winter about the Tropic of Capricorn, and this would also be the belt of low pressure at that time. The S. E. trade would cross the equator into the northern hemisphere when the sun has a northern declination, and the N. E. trade follow into the southern hemisphere during the other half of the year, giving a variation of the inner limits of the trades of perhaps 40°, instead of the 10° or 12° which are now observed. Further, as dry continents cool also more rapidly, the cold in the polar region of each hemisphere during the winter would be more intense than now, extending to the whole polar region, and coinciding with a very high pressure.

These hypothetical conditions are much more imperfectly realized than those I have sketched before, as the extent of continents is much less than that of oceans. The nearest approach to realization is on the greatest continent, that of Asia, where the highest pressure of winter is a little north of 50° N. If it is not found further north, it is because the continent does not extend much beyond 73° N. In summer, on the contrary, we find the highest temperature in N. W. India between 30° and 35° N., and also the lowest pressure there and in N. China.

The larger the continent the more it approaches to the ideal conditions I have supposed. In Africa, for example, there is a belt of lowest pressure in summer at about 17° N., and the highest temperature is probably still more to the north.

The narrower continents of North and South America are more under the influence of oceans than Africa.

As already seen, the highest mean pressure on the surface of the globe is found in winter on the Asiatic continent. It is necessary to mention here a feature of the climate of this continent, explained by geographical conditions, which has a great influence on the winds, namely, the steadiness of pressure in winter. Pressure is so constant here that, though the barometrical range generally increases with latitude, it is not greater at Jakutsk in N. E. Siberia, under 62° N. L., than in Vienna in Central Europe, Lat. N. 48°, or even in St. Louis in North America, under 39° N. L. The coldest and heaviest stratum of air over Eastern Siberia is prevented from flowing towards the south and east, where pressure is low, by the intervening mountains and plateaus, from 3000 ft. to 5000 ft. high. So long as the cold of winter continues, pressure must, therefore, be high over the cold region of Northern Asia. As it is low in the Pacific Ocean and the equatorial regions, air will flow there from the region of high pressure above the mountains and plateaus. But, as above said, the coldest and heaviest lowest stratum cannot flow towards the Pacific on account of the intervening heights; the quantity of air moving in this direction will not be great enough to supply the deficiency. Thus pressure being lower the whole winter in the S. and E., the winds should be regular from the N. and W., and this is really the case.

On the whole southern and eastern slope of Asia we see a mutual reaction of continental and oceanic influences—*the great monsoons.* The Europeans were first made acquainted with the regular change of wind and weather in India through the campaigns of Alexander the Great. Not only did the Greeks see this change themselves, but they also learned from the natives with how great a regularity this

change took place; how in all this region the winter was the dry, clear time of the year, and summer the rainy season. The navigators of the sixteenth and seventeenth centuries knew that the monsoons extended much further east than India—to the Indo-Chinese Peninsula, the Sunda Islands, and Southern China.

The cause of the monsoons is this: in our winter the continental regions of Asia are cooler than the surrounding seas, and pressure is higher. The air flows from these towards the equatorial calm-belt in the Indian Ocean, and towards the region of low pressure in the Northern Pacific, as a N. E., N., N. W. or W. wind. As the pressure is continually lower on the seas than on land at this season, this flow of air is very constant. As the air comes from the interior of the continent, and generally also from higher latitudes, *i. e.*, from colder regions, the season when these winds prevail will be a *dry season*, as the vapor contained in the air will be further and further from its point of condensation the further south and east it flows.

In our summer, pressure is very low over a great part of the Asiatic continent, owing to the heat and ascending current produced by it; therefore the air of all surrounding regions will flow towards Asia, and the movement will be especially rapid in and near Southern and Eastern Asia, as the greatest oceans of the world, the Indian and the Pacific, approach Asia in this direction.

Pressure is higher on the oceans in summer on account of the comparatively cool temperature which prevails there. Thus the movement of air will be reversed, and the wind in summer will blow from the S. W., S., S. E. and E. This *summer monsoon* will also be very steady, as the difference of pressure is nearly always in one direction during the whole summer—lower on the land.

Not only is the direction of the movement of air different in summer from that prevailing in winter, the influence on the weather is also different. As the air drawn towards Asia has to pass over a great extent of warm equatorial seas, it is laden with vapor, and this vapor will be deposited in copious showers, especially when it meets a mountain chain, which compels it to rise into higher and cooler regions of the atmosphere. Thus the *summer monsoon* is the time of cloud and rain for all Eastern and Southern Asia, or the *wet monsoon*. There is no doubt that the condensation of vapor, giving out its latent heat, is a new and powerful cause for the continuance of the movement in the same direction.

The influence exerted by the heated continent of Asia is so powerful that there is no equatorial calm-belt in the Indian Ocean during our summer, but pressure decreases steadily from about 25° S. L., the polar limit of the S. E. trade, till about 30° N. L. in Northern India, the S. E. trade crossing the equator, and being thus converted into a S. and S. W. wind. On the eastern coast of Asia the tendency of air to flow towards the continent similarly acts on the N. E. trade of the Pacific Ocean, which is drawn in as an E., S. E. or S. wind. We see here the normal or oceanic conditions very seriously disturbed by the influence of the great continental mass, Asia.

I must correct here an error which is frequently made, *i. e.*, limiting the monsoons to the tropical part of Asia, *i. e.*, India, Indo-China, and Southern China. Even on the new Pilot Chart published by the British Admiralty in 1872, this

error exists. It can be easily explained thus: in the tropical seas adjoining India and Southern China, the direction of the wind is N. E. in winter and S. W. in summer, and seamen were accustomed to consider as monsoon regions those only where winds of this direction were found. The further north we proceed along the coast of Eastern Asia the more the summer winds become S. E. and E., and the winter winds N. W. and W., yet there is good reason to consider Eastern Asia to the 60° N. L. as belonging to the monsoon region, because here also the winds in winter are from the land; in summer, from the sea, they bring dry, clear weather in the first season, and rain in the second; and last, not least, at both seasons they are very constant. (See Maps, Plates 5, 6.)

For these reasons I consider China, Japan, Mantchooria, the basin of the Amoor River, and the western coast of the sea of Ochotsk, as belonging to the monsoon region.

As to the constancy of the winds I would remark, that the inner regions of India, as, for example, the northwest provinces, Oude, Central India, Punjaub, are generally considered as being situated in the monsoon region, yet the winds are not so constant here as in Japan and the Russian Amoor Provinces.

The continent of Australia may also be considered as belonging to the monsoon region, only the periods are reversed, *i. e.*, our winter is the rainy season there, our summer the dry time. At this season regular S. E. winds are experienced in the northern part of Australia; they may be considered as the S. E. trade, strengthened by the comparatively low temperature and high pressure on the continent. They blow towards the Sunda Sea, and, further on, cross the equator, to appear as the S. W. monsoon on the coast of South China. In our winter, on the contrary, pressure being highest in Asia, and very low in the dry, hot interior of Australia, the N. E. monsoon of China crosses the equator and appears as a N. W. monsoon, bringing clouds and rain to the northern coast of Australia. In these meridians the juxtaposition of the continents of Asia and Australia on the north and south of the line, gives additional strength to the monsoons. Here no equatorial calm-belt is found, neither in our summer nor in our winter, while it exists south of India in the Indian Ocean, as there the monsoons can be said to be single, caused by the Asiatic continent alone, while further east they are double, Asia and Australia both exerting an influence.

It may be asked why the whole Asiatic continent, being equally heated in summer and the air rarefied, does not exhibit monsoons of equal magnitude coming from the Arctic and Atlantic Oceans?

The reason is this: on the Arctic Ocean, pressure is also low in summer, though probably not so low as indicated in Buchan's map of isobars, and besides it is not steady, as on the tropical seas. Yet there is a northern wind coming from the Kara Sea, and blowing through Western Siberia to Central Asia, but it is not as steady as the monsoon of India and China. Besides, as this wind comes from a colder region, it does not bring rain, and thus the secondary influence—condensation of vapor, which is instrumental in producing the monsoons of Eastern and Southern Asia—is not effective here. There flows also a current of air, and a very powerful one, from the Atlantic Ocean towards Central Asia; but, as it

is not from the tropical part of the ocean, it cannot bring much rain and produce the secondary areas of low pressure caused by condensation. Besides, the region of high pressure on the Atlantic is far from the low pressure of Central Asia, and near to that about Iceland; so that the movement in the first direction cannot be very constant. As to the air from over the lower latitudes of the Atlantic Ocean and the Western Mediterranean, it is attracted towards Africa, which is highly heated in summer, and open to the winds from the surrounding seas.

The geographical features of the North American continent explain why pressure and winds are so different over it from what is seen in Asia.

The coldest region of America is known to be to the north of the continent, on the islands and ice-bound seas and sounds north of 70°. Ice and snow being bad conductors of heat, the streams of warmer water are thus effectually prevented from having an influence on the air, and the ice-bound seas to the north of America can cool as well as continents.

But, as the coldest space north of the American continent is not separated by mountains and plateaus from the surrounding regions, there cannot be such a constant high pressure there as on the corresponding coldest space of Asia. It will be remembered that the lowest pressure of the northern hemisphere, especially in winter, exists near Iceland, which is partly due to the warm waters of the Gulf Stream. The coldest regions of America are not separated by any natural barrier from this space, and thus air, even from the lowest, heaviest strata, should flow towards Iceland. That this is the case, is shown by the winds in Greenland and on the most northerly stations of the American continent; they are northerly to a very large extent. Probably the easy intercommunication between the coldest region of North America and the region of low pressure near Iceland, explains why the former has not a high mean pressure in winter. Having not a constantly high pressure, the polar regions of America cannot influence the winds in the temperate and tropical regions of this continent as the coldest region of Siberia, with its constantly high pressure, does influence the temperate and tropical regions of Asia. Next, we find a generally high pressure to the south of the United States, on the Gulf of Mexico, as well as on the western highlands and plateaus of the continent, in lat. from 30° to 40° N. Probably, also, pressure is high to about 60° lat. N. on the eastern slope of the Rocky Mountains, where, the winter being cold, the Rocky Mountains in the west not permitting the air in the lower strata to flow towards the Pacific, and the depression about Iceland being far away, there exist all conditions for a high pressure. But barometrical observations from this region are wanting.

Thus, the Mississippi Valley and seaboard of the United States have in winter regions of high pressure to the S. and W. of them; *i. e.* they are exposed to the influence of winds from different directions, of which those that come from the S. are warm and laden with vapor, and thus able to sustain the precipitations necessary to the progress of storm-centres, while the air from the W. and N. W. is cold and dry.

A country generally level, subjected to such different influences, must have a

very variable climate, and this is known to be the case in the United States. Nowhere in the same latitudes are the variations of temperature and pressure so great and sudden as in the Mississippi Valley and in Texas. On the Atlantic sea-board the variation is somewhat less, owing to the slight protection afforded by the Appalachian Chain.

In summer again, there are no parts of North America which are as strongly heated as the interior parts of Asia, none also where pressure is as low, and thus there are no monsoons comparable in strength and constancy to the summer monsoons of Asia. Especially is this the case with the eastern part of the United States, where the land is so much pervaded by the influence of the sea that there is scarcely a summer depression of the barometer. The Gulf of Mexico is situated just in the latitudes where pressure would be lowest on a great continent, and, owing to the relative coolness of the air over great bodies of water, pressure is nearly as high over the Gulf in summer as in winter. Yet, as there is a rarefaction of the air in the interior and western part of North America, there is a monsoon wind drawn in from the Gulf of Mexico to supply the deficiency. The mean direction of the wind is southerly in summer over a great part of the United States east of the Rocky Mountains. It is more S. E. in Texas, and S. and even S. W. in the States north and northeast of it, partly due to the earth's rotation, and partly also to the influence of the lower pressure in the lake regions on the air over the Gulf of Mexico. On the Atlantic coast the winds have some monsoon features (as was shown by Prof. Coffin in 1848) but still the flow of air is much more from the southwest than would be the case in a real monsoon region, the ocean being to the east.

If, aside from disturbing influences, we consider only the mean direction of the wind, the influence of the Gulf of Mexico is seen to be paramount over a large and important region of the United States, extending from the Mississippi to the Appalachian Chain and from 34° to 42° N. L. The mean direction of the wind is about W. S. W. at all seasons, with a ratio of resultant of about 30. The cause of this is, that pressure is highest at all seasons to the S. and lowest to the N. and N. E.

Having now considered the influence of the pressure of the air on the direction of the winds, the influence on force remains to be shown.

It is easy to conceive, that, the influence of pressure once acknowledged, this influence would be the greater, the nearer areas of high pressure approach areas of low pressure, or, in other words, the nearer any given difference of pressure was found to exist. It was to be supposed, that the more this was the case, the greater would be the velocity of the winds. This has been found to be really the case.

This difference of pressure relative to distance was called by Stevenson *barometric gradient.* This term of barometric gradient may be applied to the mean direction of the wind, and the rate of progress, as well as to any given single observation. The more the isobars are crowded together, the steeper is the gradient, and the greater will be the velocity of the wind, all other conditions being the same.

There are conditions well known to science in a general way, although not

measured with accuracy, which prevent all winds from reaching the same velocity even if the relative distance of the isobars be the same.

These conditions must be considered in brief.

In the lowest stratum the velocity is lessened on account of friction on the surface of the earth, while the higher are also more or less affected by the friction of the different strata on each other.

The winds on the ocean will be less affected in this way, because of the smooth surface of the water. The greater velocity of the wind on the sea is well known. The figures published in the "Quarterly Weather Reports" of the Meteorological Office, of London, very clearly show the decrease of velocity in the interior of Great Britain even in level parts of the country.

The following table shows this for the United States. I give the mean velocity of the wind in a group of inland stations (Eastern New York) compared with that of the sea-coast (Cape Cod and adjacent islands) and also with the summit of Mount Washington, the highest peak of the New England States.

Mean Velocity of the Wind. Miles per Hour.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Eastern New York	4.1	2.8	2.4	5.1	5.7	5.4	4.5	5.1	5.8	4.8	3.3	10.4	7.9	5.7	8.7	7.5
Mount Washington[1]	19.5	...	...	17.4	21.0	17.3	15.5	**24.3**	50.2	41.7	36.8	38.8	41.8	34.0	44.8	**52.2**
Cape Cod and islands	7.8	**10.9**	5.3	9.0	6.7	9.6	9.3	6.3	19.9	**20.5**	12.2	16.1	10.6	10.9	10.9	20.0

Mount Washington having the freest position, the strength of the winds there must be considered as more nearly normal than at the other places. The N. W. winds are the strongest, both summer and winter. But in the vicinity of Cape Cod, the N. E. winds coming over the smoother surface of the sea, are the strongest.

It is safe to present the following rules for the velocity of the wind. It is greater:

1. On high isolated peaks, than at low stations.
2. On the seashore, and especially on isolated islands, than in the interior of continents.
3. In level countries than in countries surrounded by mountains.
4. In prairies, and especially desert countries, than in wooded regions.

These rules apply to the local positions only. But we may remark that it is possible to mention some regions where the velocity of the winds is greater, others where it is less, than the average over the whole earth.

To the latter belong the equatorial calm-belt, and the calm-belts at the polar limits of the trade-winds. It would be wrong to imagine that any point on the

[1] One summer and two winters, 1870–71, and January, February, and December, 1872.

surface of the earth has perpetual calms. The calm-belts themselves are not constant, but move in the different seasons, and besides, the calms are more or less frequently disturbed.

In the trade-winds belts also, notwithstanding calms are very rare, the velocity of the wind is probably less than the average of the globe.

Probably the part of the earth where the winds have the greatest velocity, is found between 40° and 60° Lat. S., where very strong westerly winds are prevailing the whole year. The cause of this is the great difference in the pressure of the air at a small distance, or in other words the steep barometric gradient.

The great difference of the mean velocity of the winds blowing over a region, and of the progress of the air in a certain direction, should be borne in mind. Where the winds are weak, but always from one direction, as in the trade-wind region, the total rate of progress measured in miles will be considerable, frequently greater than in regions where strong winds blow from different directions. It is even possible that the winds may be so counterbalanced by one another, that there will be no resultant direction, so that the definite result, as far as progress of the air is concerned, would be the same as if absolute calms had prevailed all the time.

So far as regions are considered, where the mean direction of the wind does not vary, or varies but slightly in the different seasons, the mean annual direction with rate of resultant, gives a tolerably fair idea of the character of winds in such regions.

It is quite different where regions with very great variations in the yearly direction of the wind are considered. Here the annual direction will give but a very imperfect idea of the character of the winds. This is the reason why, as far as possible, I have always placed at least two contrasting seasons, summer and winter, in giving the percentages of the winds and the mean directions in the small tables which follow, and serve to illustrate the winds of different regions of the world. This is also the reason for constructing the two maps, Pl. 5 and 6. The same attention has been given to this subject by Prof. Coffin in his extensive tables arranged in Zones, in Series B of this work, the number of observations being given generally for the four seasons, sometimes even for each month. How far the consideration of the annual result alone would mislead, the following table will show:—

	Year.		Summer.		Winter.	
	Mean direction.	Rate of resultant.	Mean direction.	Rate of resultant.	Mean direction.	Rate of resultant.
57°–58° N. L.—Eastern Scotland	S. 60° W.	28	S. 65° W.	18½	S. 62° W.	40
Greenwich, England	S. 62° W.	17	S. 61° W.	28	S. 55° W.	25
50°–55° L. N., 0° to 65° long. W.—Atlantic Ocean	S. 53° W.	23	S. 46° W.	23	S. 65° W.	36
N. W. Ohio	S. 65° W.	35	S. 59° W.	39	S. 73° W.	37
Middle Tennessee	S. 64° W.	21	S. 51° W.	22	S. 65° W.	28
Hakodade, N. Japan	S. 79° W.	22	S. 12° E.	42	N. 59° W.	63
Pekin, N. China	S. 64° W.	11	S. 16° E.	18	N. 54° W.	30
Madras, Southern India	S. 30° W.	18	S. 54° W.	85	N. 47° E.	68
Colombo, Ceylon	S. 61° W.	29	S. 58° W.	88	N. 37° E.	59

It is seen from the foregoing that in Western Europe, on the Atlantic Ocean and in a certain region of the United States, the mean direction of the wind in the year, summer and winter, is between S. W. and W. S. W., and the difference between the two seasons very small. If the rate of annual resultant is not greater, it is because at all seasons there are many winds coming from other directions than the prevailing one.

In Pekin and Hakodade the mean annual direction is nearly the same as at the above named places, but the ratio of resultant is small for another reason: the winds of summer and winter being nearly opposite to one another, the resulting annual movement is small. Yet at each of the seasons the winds are very steady. The angle between the mean direction of the wind in winter and summer is 142° at Pekin, and 133° at Hakodade, or more than $\frac{3}{8}$ of a circle, and only from 3° to 20° at the above cited places of Europe and America. Again, the mean annual direction of the wind and ratio of resultant, in Southern India and Ceylon, are very similar to those observed in Europe, but the mean direction of winter and summer nearly opposite to one another, with an extremely great ratio at both seasons, there are conditions as dissimilar as possible to those of Western Europe.

In the pages which follow, the results to be drawn from the observations on the winds are considered by geographical divisions.

SPECIAL DEDUCTIONS.

GREENLAND AND ARCTIC AMERICA.

The information we have on the winds, as well as on the general climate of Arctic America and the adjacent islands, is more extensive than that on any other Arctic region, Northern Norway excepted. Our knowledge of these regions is mostly due to Arctic explorations. The Arctic Archipelago, north of the American Continent and west of Greenland, was explored almost continuously by British expeditions for more than thirty-five years (1818–1855), in search of a northwestern passage.

The results of these expeditions are of high value to science, especially as the inducements to explorations in this direction can scarcely ever return. The bays and straits between the islands are probably the most ice-bound in the world.

Smith's Sound and Northern Greenland have been explored by the American expeditions of Kane, Hayes, and Hall.

According to the most authentic Arctic authorities, Smith's Sound offers the best route to the Pole, the sea between Spitzbergen and Nova Zembla perhaps alone excepted. It is entirely frozen only a short time, and does not present serious obstacles to navigation in steamers. This gives us reason to expect further knowledge of those regions which were so successfully penetrated by American explorers, with very inadequate means at their disposal.

A German expedition wintered in Eastern Greenland, 75° N. Lat.

We know much less of Western Arctic America; few expeditions having wintered there west of 100°. Our knowledge of the interior of British America is also less than of the Arctic Archipelago, though it is much more easy of access. More information relative to this region is very desirable.

Our knowledge of the climate of Arctic regions generally having been mainly derived from observations made in the Arctic Archipelago of America and in Smith's Sound, it is necessary therefore to inquire into the geographical position of these regions. They are situated from nearly due north to W. N. W. of Iceland, where, as was stated above, exists the lowest pressure of the northern hemisphere, nearly the whole year round, but especially in winter. This must lead to the prevalence of northerly and westerly winds. Accordingly in the stations in Smith's Sound northeasterly winds were found dominant, owing to the influence of the strait, and also to the position, N. N. W. of Iceland. (See Map, Pl. 2.)

There are great discrepancies in the results obtained at the different stations,

but these are easily accounted for, if we remember that the period of observation was short, mostly one year only, and that the climate of the Arctic regions is very changeable; still there are some differences in the direction of the winds which can only be ascribed to their geographical position. Thus Northern Greenland has the greatest prevalence of the true polar winds, northeast, and this is due in no small degree to its proximity to Iceland, as well as to the open water of Smith's Sound near a very cold continental area.

The most northerly stations west of Smith's Sound, as Northumberland Sound and Port Refuge, have the least amount of northern winds. This is, no doubt, owing to their distance from Iceland, and, probably also, to a partly open sea to the northward of them. If there is really an open sea in this direction, the pressure there must be lower in winter than on the ice-bound straits of the Archipelago. This would give rise to southerly winds to equalize the pressure, and thus explain the greater number of these winds in Northumberland Sound and Port Refuge. They do not prevail at these places, because the depression about Iceland is still felt there as well as the depression which must exist on the open waters of Davis' Strait and Smith's Sound. As the other stations of the Archipelago, except Melville and Dealy Island, are much nearer to Davis' Strait, they must feel its influence much more, while a great extent of islands and frozen bays and sounds separate them from the northern partly open Polar Sea.

The prevailing northerly winds in summer can be explained partly by the same cause as those of winter—the low pressure about Iceland. It is true the barometer near Iceland is not as low in summer as in winter. But in the Arctic zone of America the pressure rises also, especially from February to May; in the last-named month it is the highest of the year in most of the stations of this region.

It is probable that the pressure continues to rise in the circum-polar zone till July, thus causing the northerly winds of Arctic America. At this season air is also drawn towards the interior of North America, especially towards the region between the Rocky Mountains and 95° W. Long.

Arctic America is noted for its frequent calms in the colder part of the year—a feature observed by nearly all who wintered in these regions. They are, however, recorded in a very discordant manner in the journals of observations, showing there was a great difference in the meaning of the word "calm." This want of agreement has prevented a more elaborate discussion of this phenomenon, one of the most important in regard to the movements of the atmosphere.

Dr. Bessels has calculated the percentage of what he calls "absolute calms," for the hours when a self-registering wind-vane did not indicate any movement of air whatever, for the second winter-harbor of the U. S. Expedition, under Capt. Hall, at Polaris House or Lifeboat Cove.

Hours of Absolute Calm in 1000.

November, 1872, 74	January, 1873, 298	March, 1873, 188
December, " 47	February, " 79	April, " 179
		May, " 116

Average for seven months, 140.

I should remark, that in many of the stations the proportion of calms increases

towards March and April. In these months the cold is still intense in this region, and the pressure generally higher, so that barometric poles or areas of highest pressure are frequently met with. They are generally accompanied with calms or light winds. On the other hand, the indraught towards Iceland is less, as pressure has also risen there. (See Tables, Zones 2, 3, 4, and 5.)

In cold continental areas of lower latitudes, especially in Siberia, the greatest number of calms will be experienced in mid-winter, the time of lowest temperature and highest pressure. In March and April, when temperature is much higher, pressure decreases, and so also the number of calms.

The following figures give the percentage of winds in Greenland. Winter and summer are chosen as the two contrasting seasons of the year.[1]

Greenland.	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Polaris Bay,[2] No. of obsert'ns	7	20	4	14	9	**31**	8	7	3	35	**38**	5	3	13	0.3	3
" " " miles . .	12	**42**	2	6	4	27	4	4	4	**56**	17	2	2	16	2	2
Lifeboat Cove,[2] observations .									3	**80**	1.5	0.8	6	8	0	0
" " miles									3	**82**	1.7	0.4	5	9	0	0
Port Foulke	3	**45**	3	2	1	**45**	0.7	1.4	4	**73**	1.2	5	0	16	0	0.8
Upernavik	28	7	11	6	5	**36**	5	3	21	15	**40**	3	1	16	3	0
Jacobshavn and Godthaab .	16	13	20	3	5	**32**	7	4	9	16	**42**	8	6	14	2	3
Sabine Island,[3] East. Green'd	**23**	8	13	9	21	7	10	9	**47**	3	6	3	12	6	13	11

	Spring.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Polaris Bay, number of observations	0	**30**	21	18	1	20	4	4
Polaris Bay, number of miles	0	**67**	8	6	0.3	17	1	1
Lifeboat Cove, number of observations	0.8	**64**	3	1	13	18	0	0
Lifeboat Cove, number of miles	0.5	**67**	2	0.4	14	16	0	0
Sabine Island, number of observations	**46**	2	5	5	19	5	12	7

All these stations except Sabine Island are situated on the western shore of the greatest island of the world, an island covered with large sheets of ice, and the temperature of which is much below that of the surrounding seas in winter, spring, and autumn; Smith's Sound is open the greater part of the year, though bearing large floating icebergs. Monsoon winds must be expected in these conditions, and this is really the case.

The winds of Polaris Bay[4] have a peculiar interest, this being the most northerly station at which civilized man has ever wintered.[1] Polar winds prevail largely in spring and winter. Yet there is a great difference between the N. E. and E. winds. The second prevail if the number alone is regarded, but the N. E. prevail

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[1] In all cases, except when specified, the percentages are calculated from the winds collected by Prof. Coffin.

[2] From the observations of Dr. Bessels, of Capt. Hall's Expedition.

[3] Observations of the Second German Polar Expedition, under Capt. Koldewey.

[4] I owe this information on the winds of Polaris Bay and Lifeboat Cove to Dr. Bessels, who has kindly permitted the use of his observations.

largely if we take into account the number of miles. And this may be done safely, as the expedition of Capt. Hall had an anemograph of Robinson's plan. The east winds then seem to be a weak local land-wind, caused by the difference of temperature of land and sea. The N. E. winds, on the contrary, are the true polar currents, flowing towards the barometric depression about Iceland.

In summer the S. W. wind prevails as to time, but the excess is on the side of the N. E., if the number of miles is considered, but of much less amount than in winter and spring.

In the second winter station of Capt. Hall's party, Lifeboat Cove or Polaris House, as also in Hayes's Station, Port Foulke, in the vicinity, the N. E. prevail even more than in Polaris Bay in winter and spring. The W. and N. W. are entirely wanting.

In the tables of Professor Coffin, the winds at Rensselaer Harbor, Kane's winter station, were recorded with reference to the magnetic direction. As the magnetic declination is known to be 108° 12′ W., I give below the true mean direction of the wind in this locality, and also that recently calculated by Dr. Bessels for Polaris Bay. In the Map, Pl. 2, the true direction is given.

	Rensselaer Harbor.		Polaris Bay.	
	By Hours.	By Miles.	Mean direction.	Rate of Progress. Miles.
Spring	S. 75° E.	S. 87° E.	N. 38° E.	6279
Summer	S. 1° W.	S. 36° E.	S. 2° W.	1828
Autumn . . .	N. 78° E.	S. 86° E.	N. 26° E.	2685
Winter	N. 65° E.	N. 63° E.	N. 21° E.	4394
Year	S. 86° E.	S. 89° E.	N. 40° E.	11,392

The observations of Rensselaer Bay are thus shown to agree, to a considerable extent, with those of the surrounding stations. The winds are more easterly than at Polaris Bay at all seasons, and do not vary as much as at that station, the difference between winter and summer being only 91° instead of 161°. See Map, Pl. 2.

The Danish settlements of Northern and Southern Greenland (all on the west coast of the island), Upernavik, Jacobshavn, and Godthaab, have largely prevailing east winds (from the land) in winter, and west winds (from the sea) in summer. As the force of the winds has not been accurately ascertained, we cannot say whether the N. E. are much stronger than the East, as in Polaris Bay. In the summer the rocky surface of the interior (as Greenland is not all covered with ice) is highly heated by the sun, it draws in the air from the colder sea, which is cooled by the large number of icebergs floating southward.

We know much less about Eastern Greenland, the country being entirely uninhabited. Yet the 2d German polar expedition having passed a year near Sabine Island, 75° L. N., near the coast, we are able to say that the prevailing winds are N., especially in spring, autumn, and winter, while S. winds are nearly as frequent as N. in summer. The N. prevail here to a less degree than the N. E. at Lifeboat Cove and Port Foulke; but it would be rash to decide from so short a period and so few observations that the polar winds are really less prevailing in the east than in the west of Northern Greenland. The eastern coast of the island

being nearer to Iceland, where pressure is low, we might infer that the contrary should be the case, if all local influences were eliminated. Nearly all the storms near Sabine Island come from the N., and the mean force of this wind is very much greater than that of any other wind.[1]

The constancy of the polar current in Northern Greenland is indirectly proved by the small precipitation of rain and snow. The quantity of snow falling at Polaris Bay and Lifeboat Cove was scarcely measurable, according to Dr. Bessels. He thinks the glaciers of Northern Greenland are the remnant of a former age, when the climate was different. The snow and ice that melt in every summer are not now replaced by new snow, so that the glaciers must be decreasing.

The German expedition did not encounter a heavy snow-fall, and the parties who, in sledges, explored the interior, were quite astonished at the constant brilliancy of the sunshine of the Greenland summer.

In Arctic countries the sea is warmer than the land in the mean of the year; during a very short time only, in summer, are the conditions reversed. The pressure is generally higher on land, so that we must expect to see a prevalence of land-winds in the mean of the year. In looking at the map of the polar regions (Plate 2) an easterly mean direction is seen to prevail in all stations in Greenland, that have the open sea to the westward; and a westerly in the stations of the Arctic Archipelago, which have the sea to the eastward.

By sea, is meant here the more or less open waters of Baffin's Bay and Davis Strait, and not the more ice-bound straits and inlets of the archipelago. Ikogmut and St. Michael in northern Alaska have easterly winds, directed towards Behring Strait. In Ustyansk, in the extreme north of eastern Siberia, the mean yearly direction is nearly due south—as we might infer from the fact that the Arctic Ocean lies to the north of this place. Hammerfest, Vardo, and Bossekop, in extreme northern Norway, have also prevailing southerly winds for a similar reason.

The extreme prevalence of land-bound (Mediterranean) seas, north of the North American continent, greatly affect the character of the region considered in a climatic point of view. As land-bound seas in these latitudes will be also ice-bound, the air over them would cool as over a continent, so that places situated on the shores of such seas will have a cold continental climate in winter, spring, and autumn. This cold will not, however, be followed by a comparatively warm summer, as is the case on polar continents far from the influence of the sea. The melting ice over the sea absorbs the heat of the sun's rays. Thus we have a continental climate during three-quarters of the year, and an oceanic during the remaining summer quarter. This is the case in the Arctic Archipelago. It has one of the coldest climates of the world, the winter being even colder than in northern Greenland, and only a little warmer than in Iakutsk in eastern Siberia, and the summer also extremely cold.

The percentage of winds is as follows:—

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[1] See "Die Zweite Deutsche Nordpolarfahrt," Leipzig, 1874.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 3, No. 3. Port Refuge	15	10	28	18	6	9	6	15	5	1	4	38	29	13	5	6
" 3, " 1. Northumberland Sound	4	28	3	11	13	12	7	21	7	20	3	20	6	10	4	30
" 4, " 4. Melville Island	28	5	4	11	13	7	20	12	46	0.3	13	6	6	1	8	19
" 4, " 4. Dealy Island	22	14	2	6	9	15	11	22	38	7	11	6	6	3	5	24
" 4, " 9. S. E. Boothia Felix	26	15	5	4	11	10	12	16	29	6	4	6	17	12	6	21
" 4, " 10. Port Kennedy, observations	4	25	8	3.5	1.8	5.5	14	38	2.4	16	0	0.3	0.1	2	12	67
" 4, " 10. " " miles	2.6	21	6	0.4	0.5	4.5	12	53	2.4	15	0	0.1	0.1	1.6	13	68
" 4, " 11. Port Bowen	16	11	15	8	6	11	18	16	12	7	61	7	0	1.2	3	9
" 5, " 8. Igloolik	22	7	6	21	4	5	9	26	26	8	4	2	2	2	16	39
" 5, " 9. Winter Island	16	8	8	10	12	9	13	23	27	3	2	5	0.6	2	8	52
" 5, " 11. Baffin's Bay	18	14	14	10	9	14	8	13								
" 4, " 13. " "	19	7	12	18	9	8	11	16	15	7	6	7	6	5	21	33

The prevalence of the N. and N. W. winds is here strongly marked, especially in winter. At two of the stations more than half of all the winds come from the N.W. The exception presented by Port Bowen, where E. winds largely prevail in winter, is explained by the large land-mass to the E. The winds of the inland and western stations of Arctic America, as well as the Arctic Ocean in their vicinity, show more irregularities.

Percentages.	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. S.
Zone 6, No. 8. Fort Simpson	7	2	27	6	1	10	2	44	8	0.7	17	17	2	4	17	35
" 6, " 7. Fort Norman									9	1.2	2	37	4	0	24	23
" 6, Nos. 10, 11. Forts Enterprise and Reliance									11	23	18	2	5	17	16	7
" 5, No. 5. Fort Franklin	0	9	42	21	0.9	2	6	18	2	13	20	7	1.2	2	14	42
" 5, " 4. Fort Anderson	37	6	9	4	18	5	16	4	29	6	15	5	15	8	15	7
" 6, " 3. Fort St. Michael's, Alaska	27	4	6	2	28	16	12	4	25	17	7	15	19	13	1.5	3
" 6, " 5. Ikogmut, Alaska	11	19	9	4	4	22	14	17	10	25	12	7	15	10	7	13
" 6, Behring's Strait, 172°–160° W.	12	15	10	13	21	16	7	6								
" 5, " " 177° E.–160° W.	15	8	9	12	20	8	12	17								
" 4, W. Arctic Ocean, 155°–175° W.	24	25	7	6	8	10	7	13								
" 7, No. 16. York Factory	15	28	23	5	18	2	3	5	20	4	11	4	25	13	12	12
" 7, " 17. Little Whale River	28	7	6	10	2	28	9	10	3	3	11	19	22	15	19	2

From the foregoing table it appears that in Northern British America (Forts Norman, Simpson, Enterprise, Reliance, Franklin, and Anderson) there is no accordance in the direction of the winds. They seem to vary much according to locality. This is a very cold region, and being continental, calms are much more prevalent in winter than in the Archipelago. We must expect to find here higher pressure in winter than further to the east, because the depression about Iceland is not so near.

The great distance of the Atlantic depression and the mountains which lie between this region and the Pacific depression, also explain the undecided character of the winds in winter.

We have fewer observations in the summer. Among these, Fort Franklin has prevailing E. winds, coming from Great Bear Lake, where the ice does not melt till the end of the summer.

In Alaska monsoon winds are seen to prevail from the N. E. (the land) in winter,

S. W. in summer. In Behring Strait southerly winds are also more numerous in summer, while the Arctic Ocean northward of it has northerly winds at the same season.

In the last two stations lying near Hudson's Bay, a monsoon influence is exhibited in the S. winds of winter. Hudson's Bay does not freeze entirely, and thus the wind will blow towards it from the land. (See Maps, Plates 5, 6, and 14.)

TEMPERATE ZONE OF AMERICA WEST OF THE ROCKY MOUNTAINS.

On the coast of Alaska and further south in Washington Territory, the winds have a monsoon character. The cause of this is the difference of temperature and consequently of pressure on land and sea, producing a current of air from the land in winter, and from the sea in summer.

It is necessary to remember that the warm current of the Kuro-Sivo, the Gulf Stream of the Pacific, passes, in its return to the south, near to this coast, and there must be a diminished pressure over the region, at least in the colder part of the year. The interior of the continent is very cold at that time, and therefore the pressure of the air must be high there.

In the summer there is a narrow cold current passing between the coast and the Kuro-Sivo, while at the same time the interior of the continent has a great excess of temperature over the coast, and, as in other dry and warm continental areas, the pressure must be low.

There is no country of the world where the temperature of the summer increases so much as we go from the coast to the interior as on the Pacific slope of America, from Alaska to Lower California. The summer isotherm of 59° passes near San Francisco on the coast of California, and is supposed to reach the polar circle on the Yukon River, in the interior of Alaska, a difference of 28° in latitude. Fort Miller, in the interior of California, has a summer temperature of 85°.5, and Monterey, on the coast, and in the same latitude, but 59.0; difference 26.5 F. The percentage of winds in Alaska and Washington is given below, and, with the help of the maps, Pl. 5 and 6, will serve to illustrate the winds of this region. Plate 14 gives the atmospheric pressure.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Isl. of St. Paul,[1] Alaska, Behring Sea									11	6	12	9	**25**	16	14	8
Iluluk, Aleutian Islands[1]	**7**	6	6	17	19	**21**	6	9	**22**	4	12	12	14	9	10	16
Fort Wrangel	5	4	9	8	13	**25**	17	18	12	16	**24**	17	10	7	5	7
Fort Tongass	6	4	2	25	**45**	8	3	6	21	18	13	**24**	15	3	0.3	6
Sitka	5	4	9	8	13	**25**	17	18	12	16	**25**	17	10	7	5	7
N. W. Washington	4	6	3	13	21	**31**	17	4	16	9	11	**24**	12	13	8	6
S. W. Washington	6	4	0	9	3	16	28	**33**	5	17	18	**25**	5	15	3	12

[1] From Report of Chief Signal Officer, 1874.

If, as was said before, the winds of this coast have monsoon features, these monsoon winds do not overpower others, especially in winter. At that season of the year the pressure is high in the latitude from 25° to 35° N. on the coast of California, and in the same latitudes on the Pacific Ocean. Winds from this region are quite frequent, and passing over the warm waters of the Japanese current, give a very warm climate to the whole coast. The winter temperature of Sitka is equal to that of New York, and above that of St. Louis.

It seems to me that the S. E. winds which are so frequent on this coast, are, partly at least, the deflected S. W. winds of the Pacific. The mountain-chains give them a direction from the S. S. E.

The Aleutian islands are very near to the centre of lowest pressure on the Pacific, at least in winter. They occupy a position similar to that of Iceland in the Atlantic; the same may be said of the island of St. Paul in Behring Sea. The storms are frequent and severe, and the winds polar and equatorial in turn, without a marked predominance of either. In summer the centre of depression moves to the northward and inland, and accordingly the winds are principally from the south.

In Washington Territory the winds of the coast-region are very similar to those of Sitka. In the interior of Washington and Oregon the winds have no strongly marked monsoon character. (See also Maps, Pl. 5, 6, 8, and 11.)

Percentages	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
S. E. Washington	3	7	3	20	13	**39**	7	8	4	8	2	23	13	**36**	3	11
N. E. Washington	3	7	3	20	13	**39**	7	8	4	8	2	23	13	**36**	3	**11**
N. E. Oregon	3	8	5	3	5	27	**30**	18	3	15	8	6	8	**33**	15	**11**

The S. W. is here the prevailing wind, winter and summer, as in the same latitudes on the oceans and in Europe. We must see in these winds a continuation of the equatorial current of the Pacific, which crosses the coast-ranges and descends into the valleys, while part of it is deflected by these mountains and appears as a S. E. wind at Sitka. The winds of California differ in some respects from those of the northern Pacific coast. They are westerly at all seasons of the year, more S. W. in winter and N. W. in summer. The winds of the summer are very strong and steady, giving to the California coast a peculiar climate—a summer colder than anywhere in the same latitude even in the southern hemisphere. In some places the prevailing winds in summer are S. W., and the mean direction also south of W. This is probably due to the position of the coast, so that the S. W. seems to be a local sea-wind. At San Diego the number of miles was also observed, and I have calculated separately the percentages for the number of observations and for the number of miles, in the three summer months.

San Diego	Summer.							
	N.	N. E.	E.	S. E	S.	S. W.	W.	N. W.
No. of Observations	4	10	11	13	7	**29**	19	**7**
No. of Miles	1	2	0.6	8	12	12	9	**55**

Thus the N. W. wind largely prevails if the number of miles is taken into account. The following is the percentage of winds in California, Oregon, and Nevada.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
N. W. Oregon	7	1	3	2	7	**34**	25	21	4	10	19	18	12	**23**	6	8
W. and S. W. Oregon	11	5	3	6	6	14	14	**42**	10	12	7	14	9	**22**	9	17
N. W. California	**28**	12	3	4	7	11	12	23	12	8	7	14	**19**	16	11	14
California, lat. 39°–40° N.	2	1	1	5	21	19	**42**	8	9	8	15	10	**19**	14	15	9
California, lat. 38°–39° N.	5	1	1	20	**28**	22	16	8	22	6	5	**23**	11	5	4	**24**
California, lat. 37°–38° N.	1	0	1	1	5	32	**48**	13	14	11	6	12	10	**17**	14	15
California, lat. 36°–37° N.	6	3	1	2	4	22	**34**	27	13	4	1	3	9	**30**	21	19
W. Nevada	5	9	8	9	6	17	**37**	10	8	19	11	8	7	19	**21**	7
N. W. Nevada	5	5	15	12	19	14	**26**	4	9	7	10	3	8	14	**44**	5
E. Oregon	7	3	13	5	5	10	**38**	19	3	4	10	**23**	16	18	18	8
N. E. Oregon	3	8	5	3	5	27	**30**	18	3	15	8	7	8	**33**	15	11
S. W. Idaho	8	8	10	7	11	14	**24**	17	**20**	15	8	13	9	7	13	15

The mean direction of the wind in the four seasons is as follows in the same western region of North America.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Iluluk, Aleutian Islands	S. 47° W.	.11	S. 27° W.	24½	S. 81° W.	.22½	N. 30° W.	.06
Fort Wrangel	S. 64 E.	.48	S. 36 E.	20	S. 34 E.	.03	N. 46 E.	.15
Sitka	S. 6 W.	.07	S. 61 W.	34	S. 41 E.	.29	N. 88 E.	.32½
N. W. Washington	S 9 W.	.27½	S. 32 W.	44	S. 26 E.	.20	S. 48 E.	.17
S. W. Washington	S. 79 W.	.20	N. 79 W.	53½	S. 64 W.	.19	S. 73 E.	.17
S. W. Oregon	N. 76 W.	.30½	N. 54 W.	56	West.	.17	S. 35 W.	.12
N. W. California	N. 50 W.	.19	N. 32 W.	35	N. 58 W.	.22	S. 36 W.	.16
California, lat. 37°-38°; long. 121°–123°	S. 76 W.	.52½	S. 77 W.	73	S. 75 W.	.47	N. 88 W.	.12½
W. Nevada	N. 88 W.	.26½	S. 81 W.	34½	N. 58 W.	.11	S. 86 W.	.10½

Thus in summer, westerly winds very largely prevail in this region, while in winter the ratio of resultant is much smaller in California and Oregon, and easterly winds prevail further north, as shown also by the map, Plate 8.

The geographical features of the North American continent are such as to exclude a great part of it from the influence of the Pacific Ocean. The mountain-chains are higher in the west than in the east, and, what is more important still, there is a very extensive plateau occupying nearly all the western half of the continent, between 34° and 42° N. L. The eastern part of this plateau, in eastern Wyoming, Colorado, and New Mexico, and in northwestern Texas slopes gradually towards the east—the valley of the Mississippi—and is thus subjected to the influence of the Gulf of Mexico. This influence is especially felt in summer,

when the heated and rarefied air of the plains draws in that of the surrounding regions.

On the west these plateaus are walled in by ranges of mountains, and the indraught of air from the Pacific slope is thus prevented.

We know that there is a depression of the barometer in summer over the plateaus of the interior, but there are yet too few observations to decide as to the region where this depression is greatest. It is, however, most probable that it is in Utah.

There is also a low region, where pressure must be low in summer, that is the valley of the Gila and lower Colorado. The heat is extreme there, Fort Yuma and vicinity having the warmest summer in America, and the ascending current must be very powerful. Air is drawn in towards this hot region, and, owing to its geographical position, principally from the south, from the Gulf of California. (See also Map of Isobars, Pl. 14, and of Winds, Pl. 8 and 11.)

The following table gives the percentage of winds of the region east of the coast:—

Percentages.	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Fort Yuma, Cal.	5	9	10	21	**23**	17	12	4	**21**	14	7	6	7	9	15	20
N. W. Arizona	9	6	7	19	**32**	13	7	6	**35**	12	8	8	9	8	9	11
Central Arizona	8	4	3	**24**	**25**	16	14	5	18	10	4	11	15	**18**	14	10
N. E. Arizona	11	7	6	7	17	15	**26**	11	13	5	3	5	13	18	**28**	15
Central New Mexico	4	4	4	17	**36**	21	6	8	**22**	15	11	9	13	9	7	15
S. New Mexico	2	4	11	**22**	**22**	20	13	5	11	17	18	6	5	10	**22**	11
N. W. and N. New Mexico	10	9	12	10	**20**	14	19	6	14	12	9	8	15	12	**16**	14
S. W. Utah	3	1	3	7	21	**31**	23	12	**25**	9	5	3	10	15	**20**	13
N. Central Utah	19	11	11	8	16	10	15	10	**25**	14	6	8	14	8	10	14
W. and S. W. Montana	5	7	12	5	5	11	**39**	16	7	8	5	14	20	**30**	19	16
N. W. Montana	18	6	7	9	5	6	**35**	14	21	7	3	3	10	13	**27**	16
N. Central Dakota	9	6	11	13	**24**	7	19	11	10	8	12	6	17	6	**25**	16

The predominance of southerly winds in summer, as shown by this table, is very great, and it must be remembered that the greatest part of this region is mountainous, and thence great local discrepancies should be expected. The period of observation was short in nearly all cases. Considering this, the agreement between the different regions is very satisfactory. (See Plates 8 and 11.) In Utah there are less southerly winds in summer, and still less in Montana. But this is easily explained. As Montana lies north of 44° N. latitude where there is no extensive plateau, and the mean height of the Rocky Mountains is less than to the south—the westerly winds from the Pacific can therefore readily reach Montana.

We should also expect to see southwesterly winds in winter in Montana, as in California and Oregon. This is really the case. In Arizona and New Mexico, on the contrary, the winds are much more northerly in winter than in summer. I give below the mean direction of the wind in some of the regions here considered. (See also maps, Plates 5, 6, 8, and 11).

	Summer.		Winter.	
	Mean Direction.	Ratio of Resultant.	Mean Direction.	Ratio of Resultant.
Fort Yuma, Cal.	S. 36° W.	.36	N. 29° W.	.30½
Central Arizona	S. 8 W.	.39½	S. 79 W.	.15
N. W. Arizona	S. 7 E.	.36½	N. 2 W.	.31
S. New Mexico	S. 3 W.	.43½	N. 9 W.	.15
N. W. New Mexico	S. 26 W.	.18½	N. 63 W.	.25
N. Central New Mexico	S. 29 W.	.23	N. 29 W.	.27
S. W. Utah	S. 52 W.	.51½	N. 56 W.	.29½
N. W. Montana	S. 65 W.	.36½	N. 68 W.	.42½
N. Central Dacotah	S. 20 W.	.17	N. 88 W.	.17½

TEMPERATE ZONE OF NORTH AMERICA, EAST OF THE ROCKY MOUNTAINS.

This region has much in common with Arizona and New Mexico, as to the mean direction and percentage of its winds. In summer a strong current from the south sets in to supply the air which is rising on the interior plateaus. In the winter, on the contrary, the prevailing winds are N. W. and the mean direction generally between N. and W. In winter the winds are more variable than in summer, and even southerly winds are sometimes experienced. The boundaries of this region are the great axis of the continent on the W., the Rio Grande on the S.W., the Gulf of Mexico on the S. E., and the Mississippi on the E. The northern boundary is rather doubtful, but yet, as far as 45° N., winds from the S. E., S., and S. W. prevail in summer. (See also maps, Plates 5, 6, 8 and 11.)

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
E. New Mexico	5	5	7	13	**41**	18	6	4	9	8	11	9	**22**	13	21	**7**
W. Texas	9	8	15	**16**	15	13	14	9	13	10	7	8	4	11	**25**	22
Rio Grande Valley	1.1	4	13	**61**	19	1.1	0.3	0.9	17	14	9	**24**	11	3	4	**18**
Central Texas	9	7	4	19	**46**	11	2	2	**28**	6	4	8	21	13	8	12
S. Central Texas	5	5	15	**32**	**28**	9	4	2	**31**	13	12	14	12	6	5	8
San Antonio, Texas, No. of ob.	1.2	8	7	**76**	5	2	0.7	0	27	**31**	6	13	4	5	4	10
San Antonio, do., No. of miles	1.3	6	5	**79**	5	3	0.3	0	**50**	15	2	7	4	3	**4**	15.
Forts Brown and Polk with Matamoras	0.7	5	17	**52**	16	8	1	1	16	11	13	**20**	15	5	**4**	15
S. E. Texas (31°–33° N., 94°–97° W.)	4	5	12	31	**37**	5	2	3	**27**	10	8	12	19	6	6	12
Eastern Central Texas	6	6	12	19	**43**	6	4	3	**30**	4	4	11	23	7	7	14
N. Texas, E. of 98° W. long.	5	2	17	13	**47**	9	6	1	**27**	4	8	6	27	9	9	8
Arkansas, 34°–35° N.	8	9	10	13	18	**20**	13	10	13	10	9	10	9	16	12	**21**
N. E. Arkansas	17	8	**11**	11	**21**	9	12	11	16	6	10	6	22	11	20	**7**
S. E. Indian Territory	7	10	18	16	**26**	11	6	6	**22**	11	19	9	11	8	8	12
N. E. Indian Territory	5	7	10	**28**	**27**	13	4	5	18	11	9	20	13	9	5	14
Central and N. E. Kansas	7	5	4	12	**49**	12	6	1	14	6	7	9	20	16	13	16
S. W. and W. Cent. Kansas	7	9	9	23	**26**	14	**7**	6	**20**	12	6	10	10	11	12	18
S. E. Colorado	4	6	20	**25**	14	8	19	3	7	8	15	10	11	17	**25**	7
Central Colorado	3	4	4	13	4	**37**	21	14	4	7	3	1	4	**40**	21	20
N. E. Colorado	6	9	13	19	**20**	**12**	9	11	4	8	16	12	5	8	23	**24**
N. E. Wyoming	18	5	0.5	10	**24**	21	6	15	13	4	8	9	10	10	19	**27**
S. Central and S. E. Dacotah	10	7	15	**24**	14	6	7	16	19	7	12	10	9	8	12	**23**
N. E. Nebraska	13	5	5	9	**36**	12	8	12	20	5	3	9	17	9	13	**24**
S. and S. E. Nebraska	10	12	7	**23**	**23**	10	5	9	20	5	3	9	14	11	12	**26**
S. Iowa	8	4	11	11	**25**	11	18	12	9	7	10	8	12	9	22	**23**
N. and N. E. Iowa	7	8	5	18	**20**	17	9	16	10	8	4	13	11	12	12	**30**
S. E. Iowa	4	12	4	19	10	**28**	8	16	4	10	4	12	8	20	12	**29**
S. E. Minnesota	9	8	2	**22**	19	16	12	12	8	7	6	16	12	16	14	**21**
W. and Central Missouri	11	10	9	19	**25**	15	4	7	16	11	7	9	15	14	6	**22**
E. and S. E. Missouri	9	10	7	13	**21**	15	11	13	15	9	5	13	16	12	12	**17**

In Texas the winds have nearly the same direction as in Arizona and New Mexico, but the percentage of southerly winds in summer and northerly in winter is much greater. The winds in Texas have very strong monsoon features. This is due in a great measure to the proximity of the Gulf of Mexico. The state, except its extreme western part, is wholly open to the winds from the Gulf, and they must be strongly drawn in towards the land in summer, as the continent is much warmer than the sea. We have seen that there is a monsoon drawn in from the small and narrow Gulf of California to supply the deficiency in the interior. We must expect a much more powerful monsoon from the Gulf of Mexico. Winds in Texas, other than S. and S. E., are all but excluded from April to September.

In winter the winds are more northerly, but not N. E. or E. N. E. as in the trade-wind regions of the same latitudes, but N. and N. W., *i. e.* winds blow from the Staked Plain and other continental areas towards the Gulf of Mexico. Yet the prevalence of these winds, if we take the number of observations only, is not so great as that of the S. E. in summer. But the N. winds are extremely violent in Texas; they are the famous northers so well known and dreaded by seamen navigating the Gulf of Mexico, and also by travellers in Texas, especially because of the suddenness of their appearance. They are especially frequent in Central Southern Texas, about San Antonio, while the north winds east of the Guadalupe River are not so sudden and violent, resembling in fact rather the northwesters of the eastern States.

The cause of the violence of these winds must be sought to the southward in eastern Mexico. This country has not as regular a climate, with small barometrical variations, as other tropical regions of the same latitude. From December to March there are frequent storm-centres, with low barometer, passing there, as also on the eastern coast of Central America. A barometrical depression in Mexico or southward of it must draw in the air from the interior of Texas and New Mexico, where the pressure is high in the winter months. In April and May, when the barometrical variations are less in Mexico, the northers are less frequent, and cease altogether from June to September during the tropical rainy season, when barometrical variation is at minimum in Mexico. To illustrate this I give the mean and extremes of the pressure of the air at Vera Cruz.[1] (See also Plate 14.)

	Mean.	Mean Min.	Mean Max.
January	30.10	29.86	30.36
February	29.99	.68	.26
March	.93	.61	.33
April	.92	.64	.21
May	.86	.64	.09
June	.90	.73	.08
July	.96	.83	.06
August	.98	.85	.13
September	30.00	.85	.12
October	.02	.78	.20
November	.10	.79	.36
December	.11	.78	.43

[1] From the observations by Dr. Berendt, manuscript collection of the Smithsonian Institution.

In the extreme south of Texas, at the mouth and in the valley of the Rio Grande, the S. E. winds are much more frequent, even in winter, than in the rest of the State. This is an intermediate region, partaking of some of the features of the Mexican climate, where easterly winds prevail the whole year. Yet the lower Rio Grande region is subject to violent northers. This seems to lead to the conclusion that in the other regions of Texas, where northerly winds prevail in winter, they are not all northers, there being also north winds of moderate force blowing towards the Gulf.

The mean direction of the winds in the different portions of Texas, is as follows:—

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Western Texas	N. 81° W.	.29½	S. 7° E.	.15	N. 28° E.	.06	N. 57° W.	.33
Central Texas, N. of 30° N.	S. 3 E.	.24½	S. 12 E.	.52	S. 44 W.	.07	N. 70 W.	.13
N. Texas, E. of 98° W.	S. 23 W.	.27	S. 14 E.	.54½	S. 18 E.	.23	S. 72 W.	.08
Texas, lat. 31°–32° N., long. 94°–97° W.	S. 30 E.	.21½	S. 32 E.	.46½	S. 54 E.	.14	N. 14 W.	.20
S. Central Texas, lat. 29°–30°.	S. 56 E.	.32	S. 33 E.	.53	N. 77 E.	.26	N. 39 E.	.23
S. E. Texas	S. 73 E.	.37	S. 46 E.	.46	N. 66 E.	.28½	N. 24 E.	.32
Rio Grande Valley	S. 60 E.	.56	S. 43 E.	.82	S. 75 E.	.40	N. 62 E.	.19
Forts Brown, Polk and Matamoras	S. 47 E.	.52	S. 44 E.	.70	S. 81 E.	.35½	N. 84 E.	.16½

The summer, as is shown by these tables, and the maps Plates 8 and 11, is the season in which the wind is most constant, the mean direction at all stations being between S. 7° E., and S. 46° E., and the ratio of the resultant very great, except in Western Texas. In the three last regions, nearest to the Gulf, the direction is more S. E., while in the more northern part of the State it is rather S. or S. S. E. The influence of the earth's rotation is here clearly seen. The wind begins as S. E., but soon is deflected to the south, and in its further course passes to the W. of S.

The agreement is not as exact in winter, probably because we have only the number of observations, and not the force of the wind. As the N. and N. W. winds are known to be the strongest, the mean direction would be much nearer each other in the different parts of the State, if we knew the force of the winds. Yet in all cases it would be seen to be more easterly on the lower Rio Grande near the Mexican frontier.

Spring and autumn are transition seasons, and in a country with monsoon winds, as Texas, there is very little to say about them. Generally spring is more analogous to summer, and autumn to winter. (See Plate 8.)

I must further remark as to the S. E. winds of the summer, that it would be an error to consider them merely as sea-winds blowing only during the day. They are stronger in the afternoon, while about sunset there is generally a calm. But about 9 P. M. the S. E. springs up again and blows till morning, when there is a second calm. I had occasion to observe this, in the summer of 1873, in the country between the Nueces and Guadalupe, and old residents of San Antonio informed me this was the regular course. (See the figures showing the number of observations and the force of the wind at 7 A. M., 2 P. M., and 9 P. M., at the last

place for the year 1872. (Zone 13, No. 13.) Even at stations on the Gulf coast, there are scarcely any land winds (N., N. W. and W.) observed in summer, which would be the case if there was a regular alternation of land and sea breezes.

North of Texas, throughout the whole region between 34° and 44° N. and the Rocky Mountains and Mississippi, the winds have also monsoon features, but more subdued. The prevailing winds of this region are N. and N. W. in winter and S. in summer. The cause is the same as in Arizona, New Mexico, and Texas. There are some irregularities in the mountain region (Central Colorado) but east of the mountains, in Nebraska and Iowa, the general character is again strongly marked. It is less the case in S. E. Minnesota, but even there the winds are southerly in summer, and deflected to the S. E. by the direction of the Mississippi Valley. In N. E. Arkansas and in Missouri the difference between winter and summer is still less marked. This is an approach to the character of the region between the Mississippi and the Appalachian chain, where there is no difference whatever between the seasons, the mean direction being about W. S. W. the whole year round. (See Plate 8.)

The tables for this work were printed before the results of observations on two high peaks of the Rocky Mountains could be obtained, both over 14,000 feet high. A meteorological station was established on Pike's Peak in the end of 1873, by the United States Signal Service, and the "Report for 1874" contains the means of observations for the first twelve months. I have given them in percentages, adding the station of Colorado Springs, at the eastern base of Pike's Peak. On Mount Lincoln the observations were made under Professor Hayden's geological survey of the territories, from 21st July, 1871, to the end of January, 1874. Both Pike's Peak and Mount Lincoln are situated in the central part of Colorado.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Colorado Springs	2	4	2	10	**33**	12	7	**31**	**30**	3	2	19	5	6	8	24
Pike's Peak	4	8	6	5	6	**31**	21	8	14	0.4	0.8	1	1	21	**34**	27
Mount Lincoln									**36**	22	1	0.6	0	1	9	30
	Spring.								Autumn.							
Colorado Springs	**31**	8	4	20	16	4	7	10								
Pike's Peak	20	1.5	1.5	2	7	**28**	27	14								
Mount Lincoln									20	15	4	5	0.7	9	14	**32**

The difference between Pike's Peak and Colorado Springs seems to give a much greater proportion of S. W. and W. winds at the higher station, and a smaller amount of N., especially in summer. This agrees with the generally entertained opinion as to the prevailing direction of the upper atmospheric current from the W. S. W. in the middle and northern latitudes. In any case more observations are necessary in this respect.

The mean direction of the wind in the region north of Texas is:—

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
S. E. Indian Territory	S. 74° E.	.20½	S. 34° E.	.32½	N. 70° E.	.22½	N. 37° E.	.18
Arkansas, 34°–35° N. L.	S. 84 W.	.20	S. 25 W.	.21	S. 54 W.	.12	N. 64 W.	.17
N. E. Arkansas	S. 80 W.	.11½	S. 20 W.	.05½	N. 87 W.	.05½	S. 58 W.	.14
N. E. Colorado	N. 35 W.	.02	S. 21 E.	.23	S. 23 W.	.05	N. 65 W.	.16
N. E. Wyoming	N. 68 W.	.16½	S. 57 W.	.22	S. 29 W.	35	N. 66 W.	.27
W. Central Kansas	S. 77 W.	.04	S. 4 E.	.36½	S. 64 W.	.09	N. 46 W.	.20
N. E. Kansas	S. 45 W.	.11	S. 10 E.	.34	S. 44 W.	.13	N. 79 W.	.17½
W. and Central Missouri	N. 46 W.	.05	S. 20 E.	.27	S. 4 W.	.04½	N. 50 W.	.13
E. Missouri	S. 36 W.	.08	S. 3 E.	.15½	S. 54 W.	.11	S. 77 W.	.12½
S. E. Nebraska	N. 12 W.	.13½	S. 24 E.	.22	N. 82 W.	.10	N. 63 W.	.20
N. E. Nebraska	N. 32 W.	.10½	S. 22 W.	.26	S. 75 W.	.21	N. 67 W.	.24
S. E. Dacotah	N. 9 W.	.13	S. 37 W.	.20	N. 53 W.	.10	N. 32 W.	.16
S. E. Minnesota	S. 77 W.	.10	S. 8 W.	.21½	S. 48 W.	.18	S. 67 W.	.18
N. Iowa	N. 37 W.	.13	S. 9 W.	.20½	S. 73 W.	.22	N. 80 W.	.24
S. Iowa	S. 65 W.	.22	S. 32 W.	.24	S. 75 W.	.21½	N. 77 W.	.25

Here, again, as also shown by the maps (Plates 8 and 11), summer is the season which exhibits more regularity, the mean direction being everywhere between S. E. and S. W. The ratio of the resultant is greatest in the Indian Territory and Kansas, *i. e.*, due north of the Gulf coast of Texas, and far from the influence of mountains. It is least in Missouri and N. E. Arkansas.

In winter the winds incline much more to the west than in Texas, being even S. of west, in East Missouri, N. E. Arkansas, and in S. E. Minnesota, *i. e.*, in the extreme east of this region. Except in these regions there is a tolerably good agreement between the other stations.

The greatest difference between this region and Texas is seen in spring, as shown in Plate 8, when the winds are everywhere more or less westerly, except in the Indian Territory. Probably the cause is this: Texas being situated in a lower latitude is earlier heated, and the air from the Gulf of Mexico is sooner drawn in. The region here considered being further to the north, ascending currents are not established as early. Besides, when the lowlands between 34° to 42° N. are already heated, and an ascending current established over them, the deficiency is partly supplied by the cold air from the plateaus lying westward, partly by southerly winds from the Gulf of Mexico, and partly by winds from the polar regions. It is necessary to remember that the distribution of pressure in April and May is not the same as in midsummer. In the region here considered, pressure is lowest in May, while in Utah, and probably also on the lower Colorado, it is lowest in July. In the spring the winds coming from the Gulf of Mexico will be more westerly than in summer, because their point of attraction is more easterly in the former season than in the latter.

To recapitulate: *There is an extensive region in the southwest of the United States which has a common yearly period of winds, different as are its geographical features. It includes the extreme S. E. of California, Arizona, New Mexico, Southern Utah, Texas, Arkansas, the Indian Territory, Eastern Colorado, Eastern Wyoming, Southern Dacotah, Nebraska, Iowa, Kansas, and Missouri. The winds are S. E., S., or S. W. in summer, with a great ratio of the resultant in the south, diminishing*

towards the north and east. In winter the winds are mostly N. and N. W. This region is equal to more than a million square miles, or about one-third of the United States, without Alaska.

See also Maps, Plates 8, 11, and 14, which clearly show this.

To the north and northeast is a country about which it is difficult to say anything definite. It includes the larger part of Wisconsin and Minnesota, Northern Michigan, Northern Dacotah, and Manitoba.

The percentages of the winds in this region are:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Eastern Dacotah . . .	9	11	6	**25**	7	11	7	25	9	7	3	16	8	16	9	**31**
N. W. Minnesota . . .	14	2	9	4	**37**	7	21	6	22	3	6	5	**27**	6	14	17
Central Minnesota . . .	11	9	6	14	**23**	9	13	14	14	9	6	9	**20**	8	17	16
Northern Michigan . .	9	11	3	**20**	13	14	14	16	**25**	15	3	12	10	10	12	16
N. Wisconsin (Lake Superior)	7	**30**	6	6	10	19	12	10	13	14	2	3	5	**28**	22	14
S. W. Wisconsin . . .	8	6	7	14	15	**18**	13	19	11	6	6	11	10	14	18	**24**
E. Wisconsin	8	13	6	10	12	22	14	14	8	9	3	5	10	**29**	17	19
Winnipeg (Manitoba) . .	16	8	6	12	**24**	5	19	12	**24**	3	3	12	20	9	5	23

In Northern Wisconsin the influence of Lake Superior is clearly seen. The winds are N. E. in summer, or from the lake; S. W. in winter, or from the land. It must be remembered that the five great lakes never entirely freeze over, and that the difference of temperature between the air over the open water and that over the land must be great. On the Canadian shore of Lake Superior (for example, at Michipicoten) the winds are N. E. in winter and S. W. in summer. In Northern Michigan the influence of the lake is not so clearly perceived. One of the stations, Marquette, is situated on a peninsula, having the lake to the east, while others have it to the north.

Yet it seems, on the whole, as shown on Plate 8, that the winds in this belt of country bear a resemblance to the monsoon region lying to the south, especially the prevalence of south winds in summer, which is seen as far as Winnipeg (49° 52′ Lat. North).

The next region we have to consider is that between the Mississippi and the Appalachian range extending southward to the Cumberland range, and northward to Lakes Michigan and Huron, and somewhat beyond Lakes Erie and Ontario. The percentage of the winds is as follows:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
S. W. Illinois	6	9	2	12	14	**27**	12	18	8	8	3	12	10	17	16	**26**
W. Kentucky	8	10	4	9	13	**31**	8	17	12	6	6	7	15	**24**	10	19
Middle Tennessee	5	14	9	10	6	**40**	11	5	7	11	5	14	7	**27**	**17**	12
N. and Central Kentucky .	8	14	5	8	10	**31**	13	11	6	8	6	7	11	**28**	19	15
N. W. Indiana	10	7	7	9	10	**24**	18	14	4	8	6	10	7	**28**	24	13
S. E. Michigan	6	10	6	9	9	**26**	11	24	6	11	6	8	6	**27**	12	24
Toronto, Canada W. . . .	13	9	14	8	10	13	14	**19**	12	11	9	4	5	19	**24**	16
N. E. Ohio	8	9	3	6	8	**31**	18	17	4	6	3	10	12	**29**	18	18
W. New York	6	5	5	8	10	**26**	**25**	16	3	6	7	8	10	**27**	**27**	12
W. Pennsylvania	5	2	7	6	7	19	**41**	13	5	4	12	4	5	27	**32**	11
Central New York	4	3	6	10	14	15	**30**	19	5	3	7	11	14	11	**28**	21
N. W. Virginia	7	11	0.1	18	23	**25**	4	11	11	5	0.3	11	17	**29**	5	21
Central Virginia	8	7	5	7	21	21	**22**	7	8	11	3	5	14	**24**	22	13
Middle N. Carolina . . .	8	16	7	5	11	**27**	19	6	10	18	5	4	8	**22**	17	15
E. Tennessee	8	8	18	4	8	**28**	18	8	9	8	9	3	10	**30**	21	10

In the greatest part of this region S. W. and W. winds prevail winter and summer. Looking at the isobar-chart (Plate 14) we see that at all seasons the pressure is higher in the region between the Gulf of Mexico and 35° N. L., and much lower near the lakes; hence there must be a south wind, which is converted into a S. W. by the influence of the earth's rotation. In summer and autumn the pressure is generally higher in the south Atlantic States than in the same latitude further west, and it would seem that S. E. and S. winds should be frequent from this cause. But the Appalachians do not permit an exchange of air in the lower strata, and, as the difference of pressure is but slight, S. E. winds will not often blow over the mountain-chains. In the winter-months pressure is generally higher west of the Alleghanies. Air is, so to say, heaped up by the prevailing S. W. winds. (See also Maps, Pl. 8, 11, and 14.)

The daily weather-maps of the Signal Office show that the centres of storms generally take a course nearly along the northern frontier of the United States, especially in the region of the lakes. The monthly bulletins, in which the tracks of the storm-centres are laid down, show this even more clearly. Besides this, very low barometrical minima are comparatively seldom west of the Mississippi, and the pressure generally diminishes in the centre of a storm the further it advances towards the east. The storm-tracks then lie mostly to the north of the region we are considering now. The winds during the passage of a storm must then be S. W. and W. When the storm-track is more southerly, cold and dry N. W. winds, in the rear of the storm, will be experienced. We see that in this region the N. W. is frequently observed, especially in the winter. The storm-tracks are, however, generally more southerly in winter than in summer.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
S. E. Michigan	N. 73° W.	.11	S. 65° W.	.17	S. 70° W.	.27	S. 77° W.	.30
N. W. Indiana	S. 72 W.	.27	S. 69 W.	.25	S. 70 W.	.31	S. 67 W.	.34½
N. W. Ohio	S. 88 W.	.18	S. 71 W.	.19	S. 67 W.	.27½	S. 61 W.	.34
N. E. Ohio	S. 84 W.	.24	S. 77 W.	.25	S. 65 W.	.25	S. 63 W.	.34
Toronto, Canada W.	N. 21 W.	.14	N. 68 W.	.05	N. 62 W.	.15	N. 66 W.	.30
Toronto, Motion of Upper Clouds	N. 83 W.	.37	N. 75 W.	.33	N. 81 W.	.40½	N. 78 W.	.30
N. W. Pennsylvania	S. 81 W.	.22½	S. 81 W.	.25½	S. 61 W.	.27	S. 61 W.	.33
W. New York	S. 78 W.	.30	S. 76 W.	.39½	S. 68 W.	.37	S. 67 W.	.39
S. W. Illinois	S. 85 W.	.15	S. 42 W.	.20	S. 61 W.	.20½	S. 79 W.	.24
N. and Central Kentucky	S. 65 W.	.22½	S. 61 W.	.21	S. 60 W.	.22	S. 67 W.	.33
E. Tennessee	S. 78 W.	.25	S. 59 W.	.15	S. 87 W.	.15½	S. 71 W.	.27
Central Virginia	S. 78 W.	.34½	S. 51 W.	.31	S. 86 W.	.25½	S. 75 W.	.35
Middle N. Carolina	S. 77 W.	.18	S. 64 W.	.20	N. 59 W.	.20½	N. 76 W.	.21

See maps, Pl. 8 and 11, and for the motion of clouds, and the velocity of the winds, Plates 1 and 13.

The different parts of this region agree very well as to mean direction of the wind and even ratio of resultant: which generally amounts to about .30, which in winter is great enough for middle latitudes. In S. W. Illinois as well as in Kentucky the winds are much more southerly in summer than in the other parts of this region; which is easily accounted for by the proximity of these States to the trans-Mississippi region, where, as was shown before, the mean direction in summer is nearly due south. As there are no mountains separating the two regions, the country on both banks of the Mississippi being generally level, we must expect a gradual merging of one into the other. It was shown above that E. Missouri and N. E. Arkansas are also transition regions between the countries east and west of the Mississippi.

Another exception is Toronto. The winds here were recorded with great care, partly hourly during more than ten years, so that the difference presented cannot be explained by shortness of the period. The ratio of resultant is great only in winter, and it seems that a great part of the then prevailing N. W. are land winds. Lake Ontario is to the S. E. of Toronto For this reason we should expect S. E. winds from the lake in summer, but it seems that they do not prevail to a great extent, and that N. W. winds coming from over the colder waters of Lake Huron also reach Toronto. The motion of upper clouds at this place, as shown on Plate 1, nearly coincides with the course of the lower winds, being somewhat to the west in all seasons, the difference is greatest in spring, 61°, and least in summer, 7°.

The mean direction is more northerly in spring than in other seasons. The influence of the high pressure in the polar regions is seen in this, as also that of the lakes, covered at this season with melting ice. In the other seasons the mean direction is very nearly S. 67° W., or W. S. W. (See Plates 8 and 11.)

To explain the accordance of observations in this region among themselves, it must be remembered that it is comparatively old-settled, and the observations are numerous, especially in New York, Pennsylvania and Ohio, and some of them

long-continued; while in the territories the observations are mostly for short periods and the stations far between.

The lakes do not seem to cause monsoons of any consequence. There are, it is true, day and night winds on their shores, but they do not extend inland to a great distance.[1]

The winds of the Atlantic coast of North America, from Labrador to Florida, have some common features, notwithstanding the great difference in latitude.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Rigolet, Labrador	20	**36**	8	2	1	1	2	30	16	5	8	1	2	1	3	**64**
St. Johns, Newfoundland	5	12	3	13	7	31	15	13	11	13	3	7	7	19	12	**28**
Maine, north of 46°	7	6	18	8	**21**	15	13	10	17	12	6	7	13	10	14	**21**
Montreal and St. Martins, C. E.	4	13	2	10	7	**34**	11	18	4	24	1	6	3	25	13	24
S. Nova Scotia	14	7	4	9	13	**28**	14	13	19	9	3	5	5	19	18	**23**
S. W. Maine	5	9	5	19	12	**23**	7	19	7	23	2	7	2	11	9	**39**
S. E. Maine	4	11	3	9	12	**37**	7	17	7	19	2	6	3	16	**11**	**35**
N. New Hampshire	3	8	13	6	9	13	**31**	16	3	8	11	3	6	9	**41**	19
Mt. Washington, No. of obs.	5	2	2	5	3	13	17	**53**	8	2	1	4	8	19	**35**	25
Mt. Washington, No. of miles	3	0	0	3	2	13	9	**71**	8	0	0.5	1.4	12	14	27	**36**
W. Massachusetts	3	4	4	16	10	20	11	32	4	6	3	13	6	11	11	**44**
S. E. Massachusetts	4	12	4	7	9	**39**	9	17	9	10	3	4	5	21	13	**35**
Cape Cod and adjacent islands	3	19	3	10	9	**42**	7	6	9	9	2	8	4	17	10	**41**
Rhode Island	7	11	4	9	14	**31**	9	14	11	13	4	5	5	16	13	**33**
E. New York	13	4	3	7	**25**	15	19	14	17	6	4	6	17	12	19	**20**
S. E. New York	5	12	6	17	12	**22**	13	14	6	17	2	8	4	19	15	**30**
Central Pennsylvania	1	4	5	15	2	27	12	**34**	2	4	2	11	2	22	9	**48**
E. Pennsylvania	8	7	8	10	10	19	**23**	15	8	12	9	7	4	11	23	**27**
Penna. and S. New Jersey	6	14	5	10	9	**25**	12	18	6	15	4	4	3	16	19	**32**
N. and Central New Jersey	6	12	8	10	7	**26**	15	15	8	15	5	3	3	17	20	28
Easton, Pennsylvania	6	9	3	18	7	20	9	**28**	7	14	3	7	3	15	16	**35**
North Carolina, S. of 35	7	15	9	7	12	**35**	10	4	16	15	7	5	12	**17**	12	**17**
South Carolina, 33°–34°.	6	11	10	15	18	**21**	12	7	10	15	10	7	8	**22**	16	12
Georgia, 33°–34°	3	14	8	16	8	**25**	12	13	6	**14**	8	9	6	19	15	23
Georgia, 30°–33°	8	10	9	13	**22**	15	14	8	11	14	8	7	11	12	16	22
N. E. Virginia	8	8	11	11	12	11	26	13	14	9	6	6	12	11	18	24
S. E. Virginia	7	16	11	12	10	29	8	7	12	17	5	6	8	22	11	19

The general climatic features of the Atlantic slope are somewhat like those of the trans-Mississippi region, the winds of summer being more southerly than those of winter, the N. W. prevailing in winter, the S. W. in summer. The distribution of pressure is here, as elsewhere, instrumental in producing this system of winds. The region we are considering is open to the influence of the Atlantic, and as on other oceans a belt of highest pressure is seen to prevail there about 30° L. N., as shown on Plate 14. This would then cause southerly winds. But in winter this influence is counteracted by the higher pressure to the west, in the interior of the continent. Thus, the N. W. is prevailing in the colder months of the year. In summer there is nothing to check the influence of the higher pressure to the south, on the Atlantic Ocean and in the South Atlantic States. Therefore S. W. winds are seen to prevail in summer. (See Plate 8.)

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[1] See the examination of the winds at the Western Reserve College, Ohio, at the different hours of the day, by Prof. Coffin, on p. 299.

Yet there is a difference between the N. and the S. of the Atlantic Coast, which will be best seen if we divide the Atlantic slope of the United States into three parts.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
New England	5	10	8	10	12	**24**	14	16	9	11	4	7	7	14	15	**33**
Middle Atlantic States—New York to N. E. Virginia. .	8	10	6	11	14	**19**	16	15	9	12	5	6	7	14	19	**28**
S. Atlantic States, from S. E. Virginia to Georgia . . .	7	12	8	12	17	**26**	11	8	13	13	7	6	11	**18**	14	**17**

From this table it is seen that in summer the winds are more southerly in the S. Atlantic States than in the middle ones, while in New England the southerly direction is more prevailing. (See Plate 8.) In the case of New England this may be explained by the direction of the coast, which is nearly from W. to E. from Long Island Sound to Cape Cod, so as to have the ocean to the S. Thus the already prevailing southwesterly winds are strengthened by the relative position of land and sea.

In winter the differences are greater between north and south, the N. W. prevailing much more in New England than in the other sections, while in the south the winds are more equally distributed between the different points of the compass. The cause of this decrease of N. W. winds, the further we advance to the S., is the following: The N. W. winds on this coast are a movement of the air, tending to equalize the higher pressure in the interior of the continent with the lower off the coast. They are westerly winds deflected to the N. W. by the rotation of the earth. The difference of pressure in winter is much greater between the coast of Nova Scotia and the interior of New England than between the ocean near the Bermudas and the same latitude in the Southern States. This explains why the N. W. winds are rarer in this last section, in the ordinary course of events. (See Plates 8 and 14.)

During the passing of storms there is yet another cause: the storm-centres in winter pass often over New England from W. to E. In this case the winds to the northward of the storm-track will be in succession E., N. E., N., and N. W., these last appearing in the rear of the storm, being dry and intensely cold. In the Southern States the wind will then veer from S. E. to S. and S. W., sometimes to W., that is, become much more southerly.

This distribution of the winds explains also the extremely rapid increase of temperature from N. to S. on the Atlantic Coast of the United States, which is greater than anywhere else in a level country.

That the prevailing N. W. winds of New England and the middle Atlantic Coast are not merely local, caused by the difference of temperature of the land and sea, is proved by the strength of these winds. The relative prevalence of the N. W. is much greater, if we take into account the number of miles travelled instead of the number of observations only. (See Tables, Zones 9, 10, 11.) I give below the mean velocity, in miles per hour, for the three prevailing winds S. W., W., and N. W. in winter.

	S. W.	W.	N. W.
Eastern Pennsylvania, Smithsonian Stations	5.9	7.0	8.9
Eastern New York " "	5.7	8.7	7.4
S. E. New York " "	6.3	6.7	8.6
Long Island " "	6.6	7.2	9.5
Mt. Washington, N. H.	31.3	43.2	53.2
S. New Hampshire, Smithsonian Stations	6.0	7.9	8.4
N. E. Massachusetts " "	4.5	5.0	7.5
S. E. Massachusetts " "	5.6	7.7	8.2
Cape Cod and adj. isd's " "	10.9	10.9	20.0
S. E. Maine " "	6.9	6.6	11.1

This is also well shown by the map, Plate 13.

The great number and great strength of the N. W. winds at the top of Mount Washington is another proof of the great mass of air which moves in this direction. We have no observations during the winter on so high a mountain in the Southern States, but it is probable that we should not find the N. W. winds as prevalent there; it is more likely that the W. or S. W. would be the most frequent.

The mean direction of the winds in the four seasons is given in the following table, and also in plates 8 and 11:—

	Spring.		Summer.		Autumn.		Winter.	
Rigolet, Labrador	N. 7° W.	.59½	N. 9° E.	.61	N. 24° W.	.58½	N. 31° W.	.70
Maine N. of 46°	S. 81 W.	.12	S. 12 W.	.19	N. 76 W.	.15	N. 51 W.	.21½
Montreal and St. Martins .	N. 77 W.	.20½	S. 67 W.	.32	N. 89 W.	.28	N. 63 W.	.28
St. Johns, Newfoundland .	N. 44 W.	.12	S. 61 W.	.29	N. 62 W.	.16	N. 65 W.	.31
S. W. Maine	N. 65 W.	.14½	S. 54 W.	.24	N. 74 W.	.22	N. 59 W.	.35
N. New Hampshire . . .	N. 77 W.	.26½	S. 86 W.	.25½	N. 82 W.	.30½	N. 80 W.	.37
Rhode Island	N. 78 W.	.17	S. 51 W.	.28½	N. 67 W.	.25	N. 42 W.	.33½
S. Nova Scotia . . .	N. 66 W.	.21½	S. 72 W.	.25	N. 78 W.	.29	N. 60 W.	.33½
W. Massachusetts . . .	N. 63 W.	.28	S. 79 W.	.30	N. 75 W.	.30	N. 63 W.	.36
E. New York	S. 88 W.	.22	S. 70 W.	.31	S. 82 W.	.25½	N. 79 W.	.29
S. E. New York . . .	N. 80 W.	.14	S. 43 W.	.21	N. 77 W.	.19½	N. 60 W.	.29½
N. and Central New Jersey .	N. 55 W.	.19	S. 69 W.	.20	N. 69 W.	.28	N. 58 W.	.39½
E. Pennsylvania . . .	N. 68 W.	.21½	S. 75 W.	.23	N. 72 W.	.24	N. 55 W.	.29½
N. E. Virginia . . .	N. 82 W.	.19	S. 76 W.	.17	N. 82 W.	.16	N. 63 W.	.24
S. E. Virginia	S. 55 W.	.07	S. 10 W.	.15	N. 37 W.	.10½	N. 63 W.	.21
N. Carolina S. of 35° . .	S. 33 W.	.18	S. 25 W.	.29	N. 13 W.	.11	N. 55 W.	.18½
S. Carolina, 33°–34° . .	S. 41 W.	.20	S. 10 W.	.25	N. 14 E.	.12	N. 85 W.	.14½
Georgia, 33°–34° . . .	S. 65 W.	.24½	S. 6 W.	.12	N. 26 W.	.10½	N. 80 W.	.23
Georgia, 30°–33° . . .	S. 55 W.	.13	S. 14 W.	.20½	N. 19 E.	.20	N. 56 W.	.19½

The much more southerly direction of the wind in the five last regions, belonging to the S. Atlantic States, is seen at a first glance, while from New York to N. E. Virginia it is more W. S. W. Everywhere it is between S. and W. in summer, varying from nearly due south to nearly due west. The mean direction in the spring is nearly the same as in the winter, somewhat to the southward. The ratio of resultant is greater in the Middle and New England States than in the south, both winter and summer, but especially in winter.

A noticeable feature is the northerly direction in autumn in the South Atlantic region. It is at least 24° more northerly than in winter. This may be considered as an approach to the trade-wind region. The belt of highest pressure on the ocean has its most northerly position in September. As the indraught of air towards the continent, which produced southerly winds in summer, ceases in the autumn months, the air follows points of attraction further southward; that is,

flows towards the southern parts of the Mexican and Caribbean Seas, where the rainy season is at its height in October. (See also Plates 8 and 14.)

The British Provinces north of the United States have mostly the same system of winds as the latter country. This is especially the case in New Brunswick, Nova Scotia, and Newfoundland. Here we find the same conditions as in New England, that is, prevailing N. W. in winter, spring, and autumn, and S. W. in summer.

In Lower Canada the winds are influenced by the direction of the valley of the St. Lawrence, and therefore the S. W. are more frequent than they would be otherwise. The same is the case in N. E. New York, where most stations along the St. Lawrence show also prevailing S. W. winds. Labrador has N. W. winds, but the mean direction is more northerly in winter than in other parts of the Atlantic coast, and the ratio of resultant is extremely great. In fact, the N. W. wind in Labrador is so constant as to remind us of the winter monsoon of the eastern coast of Asia. As is the case there, this wind is caused by the great difference of pressure between the land to the W. and the ocean to the E., and, as this difference continues nearly all winter in the same direction, the wind is very constant from the N. W.

In summer the winds are from the N. and N. E. in Labrador, coming from the ice-laden seas in this direction. The frequency of N. W. winds, even in summer, seems to indicate that pressure is high in the interior of the continent also at that season. The great number of lakes and morasses, which are full of ice till the middle or end of summer, as also the long continuance of snow in the woods of Labrador, may be the cause of this relatively high pressure. (See Plates 8 and 14.)

A very instructive table, compiled by Prof. Coffin from observations at forty different places in Delaware, Southeastern Pennsylvania, and Southern New Jersey, shows the mean number of days of each month on which every wind blew. (See Table, Zone 11, p. 432.) The mean direction and ratio of resultant for this important region of the Middle States is given below.

January	N. 81° W.	.28	July	S. 83° W.	.41
February	N. 78 W.	.38	August	S. 64 W.	.26
March	N. 83 W.	.30	September	N. 89 W.	.31
April	S. 89 W.	.20	October	N. 88 W.	.37
May	S. 89 W.	.33	November	N. 79 W.	.39
June	S. 84 W.	.33	December	N. 79 W.	.44

Here, as generally on the Middle Atlantic coast, the change in the mean direction is slight, the wind being westerly in all months, and the difference but 38° between February, when the winds incline most to the north, and August, when the most southerly direction is reached.

A similar calculation of Prof. Coffin for forty-nine stations in New England, south of 45° L. N., shows the following. (See p. 360.)

January	N. 57° W. .38		July	S. 47° W. .41
February	N. 59 W. .30		August	S. 41 W. .25½
March	N. 65 W. .26		September	S. 76 W. .17½
April	West .14		October	S. 84 W. .26
May	S. 48 W. .21		November	N. 61 W. .34
June	S. 52 W. .32		December	N. 59 W. .39

Here the change during the year is much greater than in the Middle Atlantic States, namely, 82°, the winds being more northerly in winter and more southerly in summer.

The region which is left to complete the temperate zone of North America is one of transition. It partakes of the character of all the surrounding areas. It includes the States of Louisiana, Mississippi, Alabama, and Florida. It is bounded on the west and northwest by the trans-Mississippi region, on the north by that of prevailing W. S. W. winds between the Mississippi and Appalachian chain, on the N. E. by the Atlantic region, and on the S. by the trade wind zone of the Mexican and Caribbean Seas. (See also Plates 5, 6, 8, and 14.)

The winds in the principal subdivisions are as follows:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
N. E. Florida . . .	1	19	5	22	5	**38**	5	6	5	24	2	**7**	3	22	7	**29**
Florida, 29°–30° N. L. . .	3	16	12	**24**	10	**17**	11	7	12	**24**	7	10	8	14	8	**17**
S. E. Florida, S. of 29° N. L. .	0.7	13	**34**	**24**	15	4	7	2	13	**20**	17	17	11	4	**4**	14
W. Florida	8	11	6	14	12	**26**	10	14	**20**	18	9	11	6	9	6	**21**
Florida Keys, 24°–25° N. L. .	4	12	**30**	26	12	**7**	4	4	23	**26**	19	13	6	3	3	6
Northern Bahamas . .	1	20	20	**46**	7	4	0.4	**1**	**4**	**33**	**14**	22	4	7	2	12
Alabama, 31°–32° N. L. .	2	16	8	**23**	8	15	10	19	14	**17**	5	14	10	11	**4**	**26**
Alabama, 32°–33° N. L. .	9	9	12	**19**	13	14	14	11	16	9	8	16	11	10	12	**19**
Alabama & Miss. S. of 31° N. L.	13	12	8	**16**	**17**	13	12	10	**29**	12	8	11	12	9	6	12
Mississippi, 31°–32° N. L. .	11	12	7	15	**17**	**21**	8	9	**17**	10	5	14	14	**18**	10	12
N.E. La. & Miss., 33°–34° N. L.	14	12	8	13	**23**	14	6	10	23	9	11	16	**20**	5	3	13
S. E. Louisiana . . .	8	9	15	**20**	15	18	9	8	15	**20**	16	10	10	8	**7**	14

In this region a high pressure is to be found the whole year round, though the different subdivisions participate in it in a somewhat different degree, according to the seasons. It will be seen by reference to the isobar chart that the indraught towards the interior of the continent is so great in summer that the isobar of thirty inches remains east of the mouth of the Mississippi in this season and has even a more southerly position than in the winter, thus showing the great influence of the American continent on the pressure, as it was said before that generally the belt of highest pressure had a more northward position on the ocean in summer.

In the autumn, on the contrary, the isobar of 30 inches is found between 30°–35° L. N., while the interior of the continent has not yet regained the high pressure of winter, though the indraught has already ceased. At this season, as already remarked, about the southern Atlantic States, there is a nearer approach to the condition of the trade-wind region than at other times of the year. In Florida, as also in Alabama, Mississippi and Louisiana, the winds are decidedly northeasterly as far as 33° N. L. The air is drawn in towards the rainy belt of Mexico and Central America.

In winter the pressure is even a little higher in this region than in summer, but it is still higher to the northwest in the interior of the continent, and somewhat lower in the adjoining part of the Atlantic. The mean direction of the wind is then more northerly, or even northwesterly, as shown in the next table, and the maps, Plates 7, 8, and 14.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
N. E. Florida	S. 62° W.	.18½	S. 2° W.	.27	N. 15° E.	.23	N. 38° W.	.28
Florida, 29°–30° N. L.	N. 87 E.	.03½	S. 33 E.	.23	N. 47 E.	.34	N. 3 E.	.15½
S. W. Florida, S. of 29° N. L.	N. 18 W.	.11½	S. 77 E.	.09	N. 27 E.	.37	N. 19 E.	.25½
S. E. Florida, S. of 29° N. L.	S. 82 E.	.22	S. 64 E.	.54	N. 61 E.	.44	N. 69 E.	.28
Northern Bahamas	N. 78 E.	.42	S. 67 E.	.62	N. 67 E.	.51	N. 73 E.	.37
Florida Keys	N. 76 E.	.31	S. 66 E.	.47	N. 64 E.	.50	N. 52 E.	.46
W. Florida	S. 39 W.	.16	S. 47 W.	.19	N. 32 E.	.15½	N. 10 W.	.23
Alabama, 31°–32° N. L.	S. 16 E.	.05	S. 5 E.	.04½	N. 39 E.	.30½	N. 12 W.	.17½
Alabama, 32°–33° N. L.	S. 51 W.	.11	S. 2 W.	.12	N. 31 E.	.09	N. 54 W.	.09½
Alabama, 33°–34° N. L.	S. 81 W.	.22	S. 51 E.	.12	N. 68 W.	.04	N. 58 W.	.16
Mississippi and Alabama, S. of 31° N. L.	S. 3 E.	.15	S. 3 E.	.08	N. 40 E.	.27	N. 14 E.	.16
Mississippi, 31°–32° N. L.	S. 12 W.	.14½	S. 15 W.	.18	N. 30 E.	.09	S. 41 W.	.02
Mississippi, 33°–34° N. L.	S. 58 W.	.06	S. 11 E.	.01	N. 33 E.	.13	N. 28 E.	.04
Mississippi, 34°–35° N. L.	S. 53 W.	.10½	S. 4 W.	.31½	S. 62 W	.16½	S. 78 W.	.28½
N. E. Louisiana	S. 29 E.	.19	S. 9 E.	.23½	N. 58 E.	.18	N. 61 E.	.15
E. Louisiana, 30°–31° N. L.	S. 51 E.	.16	S. 46 E.	.20½	S. 64 E.	.30½	N. 70 E.	.21
S. E. Louisiana	S. 66 E.	.15	S. 21 E.	.23	N. 53 E.	.31	N. 41 E.	.21

The Florida Keys and the Northern Bahamas belong approximately to the trade-wind region, though, owing to the powerful influence of the continent, the winds are E. S. E. in summer. But this is also the case in the West Indies. In the other seasons the mean direction is nearly E. N. E., and the ratio great, though certainly not so great as further south, in the middle of the ocean, where it often attains from .80 to .90. The same may be said of S. E. Florida, only the winds are less regular, as is seen by the smallness of the ratio of resultant.

On the northern shore of the Gulf of Mexico, and to about 32° N. L., the winds are northeasterly in autumn, but the ratio of resultant is so small as not to warrant the calling of this a region of trade-winds. Pressure is high at this season, and a little lower on the Gulf, but the difference is very small. Besides this, the variations of pressure and temperature are great here in winter. When a belt of low pressure, a storm-centre, reaches the upper Mississippi, air is drawn from the Gulf to supply the deficiency. South winds, with high temperature and abundant precipitation, are the result. In spring and summer the Gulf States have southerly winds from the Atlantic and the Gulf. They then prevail to a greater extent than the northeasterly winds of winter.

I give below the mean direction for the year, and the ratio of resultant, to show how nearly balanced are the different directions, except in the Northern Bahamas, Florida Keys, and S. E. Florida, where the N. E. movement is well marked. (See also Plate 3.)

N. Bahamas	N. 87° E.	.45	S. W. Florida	N. 25° E.	.08½
S. E. Florida	N. 88 E.	.33	E. Louisiana	S. 85 E.	.20
Alabama and Mississippi, S. of 31°	N. 59 E.	.06½	W. Florida	N. 61 W.	.05½
N. E. Louisiana	S. 61 E.	.12	Alabama, 31°–32°	N. 29 E.	.09
N. E. Florida	S. 67 W.	.12	Mississippi, 33°–34°	N. 18 E.	.03
Mississippi, 31°–32°	S. 80 W.	.06½	Alabama, 32°–33°	S. 66 W.	.03
Mississippi, 34°–35°	S. 46 W.	.18½	Alabama, 33°–34°	S. 88 W.	.12
Florida Keys	N. 76 E.	.41½			

Except the last-named areas, we find a ratio of .20 in E. Louisiana, where it is due to the combination of the S. E. winds of summer, spring, and autumn, with the N. E. of winter. Then we have .18½ in the extreme N. of Miss., which belongs approximately to the zone of S. W. winds between the Mississippi and Appalachian chain. All the others have a very small ratio.

TROPICAL NORTH AMERICA AND WEST INDIES.

Mexico, Central America, and the West Indies are in the belt of trade-winds, but these are modified by the land-masses of North and South America. There is a great difference between the east and west shores of the first two countries. In the east, on the Atlantic Ocean, the heating of the continental areas increases the force of the trade-winds, or we may better say, induces monsoons blowing from the sea to the land in a direction but slightly different from that of the trade-wind itself.

On the western shore, on the contrary, the direction of the monsoon would be more or less opposite to that of the trades. If, as is the case near the tropics, the land is not warmer than the sea in winter, we shall have trades in this season near both coasts, the direction of the wind being nearly the same, and very different winds in the summer. This is the case in Mexico. We do not have observations on the western shore of that country, but can supply them by ship-observations taken on the Pacific Ocean, near the Mexican shores. (See Maps, Plates 3, 5, 6, and 7.) The percentage of winds is—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Pacific Ocean—																
25°–30° N., 105°–125° W.	30	24	0.3	1.2	0.3	0.6	6	**37**	**35**	19	5	4	2	5	10	20
20°–25° N., 105°–115° W.	10	2	4	4	2	11	31	**37**	**33**	11	5	5	6	6	13	24
15°–20° N., 110°–120° W.	**29**	17	6	6	2	11	17	14	26	**53**	11	0.8	0	0	1	**7**
Vera Cruz	**28**	9	13	23	11	6	9	1.5	**41**	8	16	8	11	2	3	**11**
City of Mexico	14	**34**	9	11	3	2	6	11	5	4	10	**23**	22	20	15	**3**

The N. W. winds of summer, the Mexican monsoon, as it is called, are seen to prevail especially between 20°–25° N. The cause of this may be that Northwestern Mexico, as also the adjoining part of the United States on the lower Colorado, is much more heated in summer than the zone between 15°–20°, which has at that time the regular tropical rains. As to Vera Cruz, it seems that the frequency of the N. winds is partly local, at least in summer, as the winds in the Mexican Gulf

are rather E. S. E. at that season. (See Plates 5 and 14.) The mean direction of the wind is given below for the last-named places, as well as for others in Mexico, the West Indies, and Central America.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Pacific Ocean—								
Lat. 25°–30° N., long. 105°–125° W.	N. 28° W.	.85	N. 10° W.	.77	N. 25° W.	.67	N. 24° W.	.62
Lat. 20°–25° N., long. 105°–115° W.	N. 56 W.	.70	N. 67 W.	.60	N. 37 W.	.53	N. 23 W.	.48
Lat. 15°–20° N., long. 110°–120° W.	N. 20 E.	.73	N. 20 W.	.39	N. 33 E.	.55	N. 32 E.	.82
Lat. 15°–20° N., long. 90°–110° W.	N. 46 W.	.70	N. 66½ E.	.21	N. 26 W.	.43	N. 16 W.	.34
Monterey, N. E. Mexico	S. 36 E.	.59	S. 41 E.	.82	S. 45 E.	88	N. 33 E.	.33
Cordova, E. Mexico	N. 36 E.	.36½	N. 53 E.	.49	N. 46 E.	.39½	N. 45 E.	.28
Vera Cruz, E. Mexico	N. 87 E.	.25	N. 78 E.	.21	N. 5 E.	.40	N. 22 E.	.37½
N. Coast of Tehuantepec	N. 29 E.	.18½	N. 54 E.	.44	N. 38 E.	.26	N. 53 E.	.32½
West Indies—								
Havana, Cuba	N. 78 E.	.62	N. 80 E.	.70½	N. 79 E.	.69	N. 69 E.	.68
Turk's Island, S. Bahamas	N. 71 E.	.67	S. 64 E.	.52	S. 85 E.	.55½	N. 78 E.	.63½
Jamaica, Porto Rico, San Domingo and Sombrero Island	N. 73 E.	.61	N. 81 E.	.58	N. 83 E.	.67	N. 73 E.	.52
Barbadoes	S. 85 E.	.87½	N. 88 E.	.87	S. 86 E.	.85	N. 76 E.	.89
City of Guatemala	N. 69 W.	.03½	N. 32 E.	.41	N. 44 E.	.62	N. 41 E.	.76
Pacific Ocean, 5°–10° N., 75°–90° W.	S. 22 W.	.16	S. 47 W.	.58	S. 42 W.	.43	N. 28 W.	.30
Costa Rica	N. 61 E.	.92	N. 74 E.	.51	N. 58 E.	.38½	N. 60 E.	.82

(See also Plates 5, 6, and 7.)

In the West Indies the direction of the wind is nearly due east, and the ratio of resultant great, especially in Barbadoes. Here we have the real oceanic trade-wind. About Havana the case is different. Cuba is sufficiently large to have monsoons, but as we have observations on the northern coast only, the result of the ascending currents of the summer in the interior of the island is to give additional force to the already prevailing E. N. E. winds. Observations on the south and west coasts of Cuba and San Domingo would show another distribution of winds. It is said by travellers that the Republic of San Domingo, in the eastern part of that island, is subject to the full force of the trade-wind, and the climate less hot, and healthier than could be expected, while Hayti, in the west, has not as regular trades and a hotter climate.

The eastern coast of Mexico has not as regular trades as the West Indies under the same latitude. In winter especially, the barometric range is great, and accordingly the winds variable; the sudden cold *northers* are especially noticeable in winter. They appear when pressure is very low in Mexico and Central America, and high in Texas and New Mexico. The appearance and course of the storm-centres, on which depend the Mexican northers, have not been investigated as have those of the United States. The northers extend far beyond the eastern coast of Mexico. The coast of Honduras, as far as Omoa, is subject to them, and they pass even over the low Isthmus of Tehuantepec to the Pacific coast. (See Map, Plate 6.)

On the north coast of Tehuantepec the mean direction of the wind is more northerly than in the rest of Mexico and the West Indies. This is no doubt due to the relative position of land and sea. In the city of Guatemala southwest winds

are as frequent in spring as northeast. This is the result of the great heat of this region, when, under the influence of the nearly perpendicular rays of the sun, a powerful ascending current is induced. The deficiency is supplied both from the Atlantic and Pacific Oceans, and, in the latter case, probably by air from the S. hemisphere. In the summer Guatemala has its regular rainy season, and the heat decreases. (See Plate 7.) On the Pacific Ocean, between 5°–10° N., near the coast of Central America, the movement of the air is already from the southwest, except in winter, showing the equatorial belt of lowest pressure to be about 10° L. N. In Costa Rica, nearly in the same latitude, in a plateau between the Atlantic and Pacific Oceans, the wind is still N. E.—that is, the regular trade. (See Plates 5, 6, and 7.)

The republic of Nicaragua lying in a depression between the Atlantic and Pacific Oceans, but with its settled part nearer to the latter, is said to have also very regular trade winds, so that its climate is thought to be one of the healthiest in the tropics.[1]

The contrary seems to be the case in San Salvador, which has high mountains to the N. E. It is said to have the hottest climate of Central America. Probably there is a monsoon from the Pacific Ocean the whole year round, as under this low latitude there is little difference between the temperature of winter and summer.

SOUTH AMERICA.

There are very few observations on the winds of tropical South America, and, but for the regularity of the climate of these low latitudes, and the general descriptions given by scientific travellers, we would be at a loss to say anything definite about these countries.

The same may be said relative to barometrical observations, which furnish the key to the winds. They were made nearly exclusively on the coasts, and we do not know how far the extensive plains of South America modify the pressure of the air, if there is a depression there, at all comparable to that existing in the interior of Asia, Africa, and North America.

The want of accurate determination of heights would prevent our knowing it, even were barometrical observations more numerous. When we have barometrical observations from the temperate zone and see the pressure of summer fall much below that of winter, we judge that there must be a depression of some magnitude, even if, the accurate height of the station being unknown, we are unable to reduce the barometrical observations to sea-level. Not so in a tropical country, especially near the equator. The change of seasons can scarcely be said to exist, and, be the pressure higher or lower in the middle of a continent than on the oceans, it will not change perceptibly during the year.

Yet, summing up what we know of the physical geography of South America, we can hardly expect a very low pressure there, especially in the equatorial Amazonian region, as it is covered with dense forests, and the heating by the sun and

[1] See Squier, Nicaragua. Wagner, Naturwissenschaftliche Reisen, etc.

consequent ascending current cannot be much greater than on the ocean. We should rather expect a great barometrical depression in the treeless llanos of the Orinoco, and in the Pampas of the Argentine State, or in the Campos of southern Brazil, as shown on Plate 14. The last two regions being sub-tropical in greater part, the difference of season is well marked. We do not possess a single annual series of observations in the Pampas and Campos, but already Rio Janeiro, Montevideo and Buenos Ayres, as well as the stations of Chili, have a lower pressure in the warm months of the year.

In studying the winds of South America, the physical geography of this continent must be borne in mind. It is separated into two very unequal parts by the chain of the Andes, which runs near to the western coast. The mountains are so high, between 9° N. L. and 40° S. L. as not to permit any interchange of air in the lower strata. The eastern part of South America is generally level, having but two mountain systems of any importance, that of Brazil and that of Guiana, which were not inappropriately compared to the Alleghanies and the Canadian plateau in eastern North America.

These secondary mountain chains of South America have no great influence on the course of the winds, the whole extent of the continent to the eastern slope of the Andes being subject to the trade-winds, and the effect of the continental mass is here rather to intensify them.

This is especially the case on the Amazon, as stated by all travellers who have been there.[1] They say the eastern wind is very regular, especially in the dry season, June to November, blowing at times with the strength of a gale. In the rainy season, especially on the upper Amazon, it is less regular, being frequently interrupted by calms and westerly winds. There can be no doubt as to the general accuracy of these facts, notwithstanding the want of long-continued observations.

We possess, also, an admirable description of the course of the seasons on the llanos (treeless plains) by A. Von Humboldt. The regular blowing of the trades, the clearness of the sky, and want of rain from November to May are particularly noticed there. The appearance of the rainy season is announced by shifting of the wind to S. W. The countries on the lower Orinoco (see Plates 5 and 6) are in the region of the northern trades, while the southern trades are already dominating on the Amazons.

There is a region between 1°–3° N. on the Rio Negro which seems to have prevailing calms and rain in all months, according to Humboldt and Wallace.

We have observations from Venezuela and Guiana, where the winds are as follows.[2]

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[1] See Hartt's Geol. and Phys. Geogr. of Brazil; Bates, the Naturalist, on the Amazons; Wallace, Amazons and Rio Negro; Martens, Reise nach Brazilien; Herndon and Gibbon, Explorations of the Amazon.

[2] To prevent confusion I give the months of observations for the equatorial regions and the southern hemisphere. In the tables "Winter" always means December, January, and February, and "Summer" June, July, and August.

	June, July, August.								December, January, February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Northern Venezuela	6	17	**32**	22	8	9	4	0.3	2	**45**	23	13	3	6	5	3
Catharina Sophia (Guiana)	3	**41**	22	24	5	4	0.1	1	4	**68**	13	11	1	0.2	0.1	10

If N E. and E. are taken as the true representatives of the trade-winds, we see that they amount to 49 per cent. of all winds in the rainy season of Northern Venezuela, and to 68 per cent. in the dry season. In Guiana the trades are more regular, but it seems that it lies somewhat to the S. of the thermal equator; as December, January, and February are rainy months, the proportion of N. E. winds is then greatest. (See Plates 5, 6, and 7.)

In Tropical Brazil we have only the observations in Rio Janeiro, from which we deduct the PERCENTAGES given in the following table. To gain a better insight of the winds of this country, it is necessary to obtain observations made on the Atlantic Ocean near the coast.

	June, July, August.								December, January, February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Lat. 19°–21° S., long. 37°–39° W.	11	**30**	17	23	12	4	0.6	0.7	24	**37**	12	10	0	0	4	13
long. 35°–37° W.	15	15	24	**34**	4	2	0	5	31	**35**	17	10	3	0.4	0.4	3
Lat. 20°–25° S., long. 37°–39° W.	21	**35**	12	13	8	3	2	6	**40**	**30**	7	6	3	1	3	11
Rio Janeiro	19	19	0	**31**	17	0	2	12	6	11	5	**45**	4	5	8	17

On the Atlantic Ocean, near the coast of Brazil, the winds are more northerly in the rainy season, from December to February, or in the summer of the southern hemisphere. As to Rio Janeiro, the winds are influenced by the locality. The sea-wind (S. E.) generally begins at 9 A. M. and blows till sunset, while land-wind and calms prevail night and morning.

The northerly direction of the winds off the coast of Brazil points to a barometrical minimum in the interior to the west of the Organ Mountains in the campos, as it should do, considering the great heat of the summer of the S. hemisphere, and the sparse covering of trees on the campos. Easterly winds are much more regular and strong in Northern Brazil[1] than on the coast near Rio Janeiro. In the latter region they are to be considered as sea-breezes rather than trade-winds.

In the La Plata States and on the Atlantic Ocean near them, the few observations we have give the following results in PERCENTAGES:—

[1] Burton gives a description of the strength of the E. winds on the lower S. Francisco River in "Highlands of Brazil."

	June, July, August.								December, January, February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 25 N. 24 Buenos Ayres	17	6	16	15	6	19	11	8	26	24	11	10	1	16	4	7
" 24 N. 24 Assumption	10	14	38	17	11	2	6	2	...	...	...	...	...	...	...	...
" 25 N. 23 Parana	24	21	14	15	7	12	6	1	9	18	13	20	25	9	1	5
" 25 N. 22 Mendoza	3	3	3	33	13	13	13	20	9	15	3	20	30	15	1	6
" 26 N. 28 Atlantic Ocean 50°–60° W.	9	29	2	16	16	14	11	2	17	13	7	13	8	15	13	14
" 27 N. 19 " " 55°–65° W.	...	...	...	...	...	...	...	..	17	10	4	4	12	22	14	18

The only observations of a year's duration made in the interior are those at Mendoza and Parana by Burmeister.[1] He remarks as to Mendoza, that calms largely prevail, strong winds are very rare. In Parana, on the contrary, as on the coast of the La Plata States (Buenos Ayres, Montevideo) the winds are violent and atmospheric changes frequent and sudden. In this respect it reminds us of the climate of the Atlantic coast of the United States, though extremes of heat and cold similar to those of North America are never experienced. Two winds are especially noted as strong, the Pampero (S. W.) and the Su-Estada (S. E.). Though Parana is near to Buenos Ayres, the yearly period of the winds is nearly opposite. (See Plates 5, 6, and 7.)

The winds on the Straits of Magellan and on the west coast of S. America are very different from those of the eastern part of this continent, as shown in the following table of PERCENTAGES.

	June, July, August.								December, January, February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 29 N. 26½ Punta Arenas, Mag. Str.	19	12	7	0	3	12	31	16	10	5	4	1	7	13	41	19
" 27 Puerto-Montt (Chili)	66	2	1	5	8	3	3	12	29	9	1	17	28	1	1	14
" 25 N. 20 Valparaiso (Chili)	35	13	4	9	17	10	4	8	18	9	3	1	30	23	7	9
" 25 N. 21 Santiago (Chili)	7	26	8	9	11	17	5	16	4	12	5	4	8	48	12	8
" 27 Pacific Ocean, 75°–80° W.	12	4	3	5	8	17	26	25	11	5	2	3	9	17	29	24
" 25 " " 71°–75° W.	22	7	0.4	10	28	16	5	12	5	2	0.5	6	62	16	4	6
" 24 " " 70°–85° W.	0	0	9	12	64	8	3	5	0	0	0	6	69	14	4	6
" 23 " " 70°–80° W.	4	1	2	44	18	24	3	5	0	0	0	6	70	18	5	1
" 22 " " 70°–75° W.	0	0	1	70	18	10	1	0	0	0	11	78	7	0	4	0
" 21 " " 76°–80° W.	0	0	16	60	24	0	0	0	0	0.8	8	69	22	0	0	0
" 20 " " 85°–95° W.	0	1	7	90	2	0	0	0	0	1	16	75	8	0	1	0
" 19 " " 80°–85° W.	0	0	2	40	42	12	2	1	0.5	0.3	3	51	34	7	2	0
" 18 " " 80°–85° W.	0.3	3	2	11	41	37	5	0.5	2	0.9	2	17	37	30	9	2
" 17 " " 75°–90° W.	3	0	3	14	15	36	19	11	16	20	6	6	3	11	20	18

The changes of the winds along the W. coast of South America are very regular and gradual; we can follow them for about 60° of latitude. In the extreme south, at Punta Arenas westerly winds are known to prevail especially from December to February, the warm season, while from June to August the number of N. and N. E. winds increases. These are land-winds. The mean direction is found to be northwesterly at all seasons, and the ratio of resultant great (see next page). We are here in the belt of westerly (or northwesterly) winds of the

[1] See his "Klima der Argentinischen Republik."

southern hemisphere, which are very strong and prevail all around the globe, especially from 40° to 60° S. In Puerto Montt these winds also prevail, especially in the cold season, June to August, while the quantity of southerly (cold polar) winds increases in December and February.

In Central Chili (Valparaiso and Santiago) we meet opposing winds in winter and summer. They are northerly in the cold season, southerly in the warm. This is a feature of the sub-tropical belt, which is especially well developed in the southern hemisphere, owing to the great extent of sea. But in Chili the winds are S. and S. W. from December to February, instead of S. E., the direction of the true trades. But this is easily explained by the high chain of the Andes, which does not permit an extensive circulation of air from the S. E. Besides this, air is drawn towards the land from the sea, which is to the westward. The seasons of Central Chili are in keeping with the sub-tropical winds; the summer months are rainless. The further we advance to the N. the greater time the polar winds (S. E., S., S. W.) blow and the longer is the rainless season. About 27° S. the rain ceases altogether, and this belt stretches along the coast of Bolivia and Peru to 5° S.

Santiago has regular sea and land winds, especially from December to March, as is shown by the tri-horary observations of the U. S. expedition under Capt. Wilkes. (See tables, Zone 25.) At midnight, 3, and 6 A. M., the winds are nearly N., from 9 A. M. to 9 P. M. they are nearly S. W. There is no gradual passage of one into the other, but a calm separates them in the morning and evening.

From the latitude of Central Chili to the Isthmus of Panama we can supply the deficiency of land-observations by those made at sea, near the coast. The prevailing wind in zones 25 and 24 (25°–35° S.) is S., especially in the last, where from that quarter more than half of all the winds blow. As we advance towards the north the wind is deflected to the S. E. by the influence of the earth's rotation. Between 5° and 10° S. (Zone 20) 90 per cent. of all the winds blow from the S. E. in the cold months of the year, giving the ratio of resultant 96. This gradual change in the direction of the wind is clearly seen on Plates 5 and 6. There is scarcely any trade-wind region in the southern hemisphere where they are so largely prevailing, and none in the northern hemisphere. Yet it is necessary to remember that the observations between 5° and 10° S. were taken further from the coast (85°–98° W.) than on the other parallels, and thus the proportion of S. E. winds is greater, and of S. less. The nearer to the coast, the less frequent are the S. E. winds, because of the proximity of the Andes on the E., and also because the land is here much warmer than the sea, on account of the extremely cold Peruvian current.

As we approach the equator, the S. winds again increase. Between 0° and 5° S. this increase is probably caused by the position of the cold marine current, which is deflected to the westward. But southerly winds here cross the equator, and are by the earth's rotation deflected to the S. W. Already between 0° and 5° N. there is a great proportion of S. W. winds, though the S. winds still prevail. The mean direction is to the W. of S., as shown on Plates 5 and 6. Between 5° and 10° N., even southerly winds prevail during nine months, especially from June to August. Only in the winter of the northern hemisphere the wind is N. W., and then even with a small ratio of resultant. The equatorial boundary of the northern

trades is thus seen to lie much N. of the equator in the Eastern Pacific. A great body of air is thus drawn in to about 10° L. N., and forms what is called a S. W. monsoon.

In other regions this is also the case; these S. W. monsoons reach a much higher latitude, about 12° N. on the coast of Africa, 17° N. in the interior of this continent, and even 30° N. in India. The following table gives the mean direction of the wind at stations in South America:—

	March to May.		June to August.		Sept. to Nov.		Dec. to Jan.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Northern Venezuela	....	...	S. 81° E.	.44½	S. 66 E.	.19	N. 70° E.	.56
Catherina Sophia, Guiana	N. 63° E.	.29	S. 82 E.	.58	N. 77 E.	.55	N. 69 E.	.69
Atlantic Ocean—								
Lat. 19°–21° S., long. 35°–37° W.	S. 60 E.	.47	S. 79 E.	.55	N. 65 E.	.56	N. 55 E.	.63
Lat. 21 –23 S., long. 37 –39 W.	S. 36 E.	.18	N. 86 E.	.40	N. 72 E.	.38	N. 37 E.	.64
Lat. 40 –45 S., long. 55 –65 W.	N. 74 W.	.25	N. 66 W.	.33	N. 55 W.	.25	N. 63 W.	.26
Rio Janeiro	S. 20 E.	.20	N. 86 E.	.22½	S. 69 E.	.21	S. 58 E.	.19
Buenos Ayres	N. 65 E.	.27½	S. 25 E.	.04	N. 87 E.	.38½	N. 27 E.	.33
Assumption, Paraguay	N. 89 E.	.37	S. 86 E.	.50	....	...	....	...
Punta Arenas, Magellan Strait	N. 63 W.	.41	N. 53 W.	.44	N. 76 W.	.53½	N. 80 W.	.56
Puerto Montt, Chili	N. 18 W.	.36½	N. 7 W.	.63	N. 2 W.	.19	N. 82 E.	.12
Valparaiso, Chili	N. 12 W.	.8½	N. 13 E.	.15	S. 38 W.	.12	S. 48 W.	.21
Santiago, Chili	S. 24 W.	.6½	N. 31 E.	.07	S. 47 W.	.28	S. 57 W.	.32½
Pacific Ocean, Zone 27. 75°–80° W.	N. 81 W.	.52	N. 77 W.	.48	N. 78 W.	.46	S. 78 W.	.52
" " " 25. 71 –75 W.	S. 37 W.	.39	S. 62 W.	.17	S. 22 W.	.57	S. 25 W.	.64
" " " 24. 70 –85 W.	S. 28 W.	.64	S. 8 W.	.75	S. 6 W.	.76	S. 5 E.	.74
" " " 23. 70 –80 W.	S. 17 E.	.81	S. 2 E.	.54	....	...	S. 27 E.	.84
" " " 22. 70 –75 W.	S. 32 E.	.81	S. 22 E.	.84	....	...	S. 41 E.	.88
" " " 21. 76 –80 W.	S. 43 E.	.83	S. 40 E.	.86	S. 37 E.	.91	S. 40 E.	.92
" " " 20. 78 –85 W.	S. 43 E.	.96	S. 36 E.	.95	S. 46 E.	.96	S. 42 E.	.88
" " " 19. 80 –85 W.	S. 33 E.	.82	S. 14 E.	.82	S. 17 E.	.79	S. 24 E.	.81
" " " 18. 75 –80 W.	S. 39 W.	.73	S. 32 W.	.75	S. 31 W.	.72	S. 27 W.	.49
" " " 17. 75 –90 W.	S. 22 W.	.16	S. 47 W.	.58	S. 42 W.	.43	N. 28 W.	.30

ATLANTIC OCEAN.

There are four wind-belts stretching across the Atlantic Ocean: the northern belt of westerly winds (principally S. W.); the northern trade-winds (N. E.); the southern trade-winds (S. E.); and the southern belt of westerly winds (principally N. W.). The first and the last of these are also called belts of variable winds in opposition to the constant trade-winds.

As the Atlantic Ocean is the great highway of civilized nations, its meteorology is better known than that of any other ocean. Though narrow when compared to the Pacific and Indian Oceans, the winds have sufficient space on the Atlantic, as it has very few islands, and no mountain-chain in its vicinity at all comparable to the Andes, which exercise so great an influence on the winds of the Pacific. This being the case, the winds of the Atlantic can be regarded as typical for the oceans. (See Plates 5, 6, and 7.)

The most important boundaries of the different systems of winds which occur in the Atlantic are the so-called outer (or polar) and the inner (or equatorial) limits of the trades. We give below these limits, according to the best source of informa-

tion, the "Pilot Chart of the Atlantic Ocean," edited by the Meteorological Office in London.

MEAN POLAR LIMITS OF THE N. E. TRADE.

	MERIDIANS.										
	65° W.	60° W.	55° W.	50° W.	45° W.	40° W.	35° W.	30° W.	25° W.	20° W.	17° W.
January to March	26½° N.	25° N.	23½° N.	23° N.	24½° N.	26° N.	26½° N.	25½° N.	25½° N.	28½° N.	30° N
April to June . .	28 N.	24½ N.	23 N.	25 N.	27 N.	28 N	28 N.	28 N.	28½ N	32 N.	33 N.
July to September	27 N.	27 N.	26½ N.	26 N.	26½ N	27½ N.	27½ N.	28½ N.	31 N.	31½ N.	32½ N.
October to Dec. .	26 N.	24 N.	22½ N.	22 N.	22½ N.	24½ N.	25½ N.	25½ N.	26½ N.	29½ N.	31 N.

EQUATORIAL LIMITS OF THE NORTHERN AND SOUTHERN TRADES.

		MERIDIANS.					
		40° W.	35° W.	30° W.	25° W.	20° W.	17° W.
January	N. E.	3° N.	1½° N.	2° N.	4½° N.	6½° N.	8° N.
	S. E.	1 N.	0½ N.	1 N.	2 N.	3 N.	3 N.
March	N. E.	1½ N.	0	0½ N.	2½ N.	5 N.	6 N.
	S. E.	1 S.	0½ S.	1 S.	0½ N.	0½ N.	1 N.
May	N. E.	3½ N.	3 N.	3½ N.	5½ N.	8½ N.	
	S. E.	0½ N.	0 N.	2 N.	3 N.	3½ N.	
July	N. E.	8½ N.	9 N.	10 N.	12 N.	14 N.	
	S. E.	4 N.	4 N.	3 N.	3 N.	3 N.	
September . . .	N. E.	11½ N.	12 N.	11½ N.	11 N.	12 N.	
	S. E.	6 N.	4 N.	2 N.	2 N.	0	
November . . .	N. E.	6 N.	6 N.	6 N.	6½ N.	9½ N.	
	S. E.	4½ N.	4 N.	3½ N.	3½ N.	4 N.	

MEAN POLAR LIMITS OF S. E. TRADE.

	MERIDIANS.									
	30° W.	25° W.	20° W.	15° W.	10° W.	5° W.	0°	5° E.	10° E.	15° E.
January to March . . .	19° S.	21° S.	24° S	26½° S.	28° S.	29° S.	30° S	31½° S.	32½° S.	33° S
April to June	21½ S.	23 S.	24 S	25 S.	25 S.	27 S.	28½ S	32 S.	33½ S.	
July to September . . .	20½ S.	22½ S.	24 S	24½ S.	27½ S.	28½ S.	29½ S.	29½ S.	30½ S.	
October to December . .	16½ S.	18½ S.	20½ S.	21 S.	22½ S.	28 S.	28½ S.	29 S.	30 S.	

The N. E. trade is much more to the north in the eastern part of the ocean than it is near the coast of America, and on the meridians of 55° to 50° W. its polar limit is still further south. We do not know accurately the equatorial limits of the N. E. trade; on these meridians they must, however, fall on the continent of S. America. The trade-wind belt seems to be more narrow about 40° W. than further eastward, except in the months from July to September.

The equatorial belt of calms and variable winds between the N. E. and S. E. trades is much broader and better marked in the eastern part of the ocean than in the middle. About 20° W. its mean breadth attains 12° in September, and even in January 3½°, while at 35° W. its breadth is only ½° from January to March, so that frequently ships sail from one trade into another without passing through intervening calms. It should be observed that the direction of both trades is much

more easterly in the western than in the eastern part of the ocean. This will be readily seen by a reference to the map. (Plates 3, 5, 6, and 7.)

There are in other places much greater differences in the limits of the S. E. trade. Near the coast of America the winds are so irregular that the seamen do not consider them true trades, thus on the meridian of 30° W. the polar limit is set down at 16½° S. to 21° S. according to the seasons. Near the coast of Africa (10° E.) the polar limit is south of 30° S. at all seasons. The S. E. trade advances much beyond the equator, except in the months of February, March, and April. In September it goes to 6° N. under 40° W.

The narrowing of the ocean in its equatorial part between Cape S. Roque in S. America and Cape Verde in Africa does not allow of a determination of the equatorial limits of the trade east of 17° W. and west of 40° W., as it is known that the trades blow regularly only on the ocean.

The greater breadth, however, of the S. E. trade and its regularity near the equator are well known.

Along the coast of S. Africa there are prevailing S. W. winds the whole year. They exist also on the ocean. This African monsoon is caused by the rarefaction of the air in the interior of the continent, and, in the months from July to September, extends far beyond the equator, and occupies much of the zone between the S. E. and N. E. trade. Violent rains and thunder-storms are experienced at this season in this region of S. W. winds. There is no doubt that the S. E. trade is drawn far beyond the equator and gradually changed into a S. and then a S. W. wind. Having passed over a broad expanse of warm sea it is copiously loaded with vapor.

From January to March the Pilot Charts give the southern boundary of the S. W. winds at 2½° N. and 15° W. It crosses the equator under 10° W.; 7° S. under the meridian of Greenwich; 10° S. under 4° E.; 20° S. under 10° E. Thus the belt of S. W. winds has the greatest breadth opposite the Bay of Biafra, and is much narrower North and south. From April to June the S. W. winds advance to 19° W. opposite Sierra Leone, while the boundary is nearer to the coast of Africa further southward.

From July to September the belt of S. W. winds occupies a great space off the west coast of N. Africa, between 17° and 32° W. and 6°–11½° N. If the boundary were traced for every month, it would be found to coincide much more closely with the inner limits of the N. E. and S. E. trade; as it is, it is near enough, as the southern limit of the N. E. trade is 12° N. in September, near the coast of Africa, while the S. W. monsoons begin about 11½° N.

It is important also to obtain a knowledge of the minor characteristics of the winds of the Atlantic, and this can best be done by studying the percentage of winds in the different regions of the ocean, as presented in the following table:—

	June. July. August.								December. January. February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 7. N. 20 : 5°–20° W.	5	5	4	11	14	**25**	20	15	0	0	0	0	32	**37**	21	11
" 8. N. 22 : 15 –20 W.	5	3	7	12	**25**	18	22	9	4	4	9	14	16	19	**24**	11
" 8. N. 24 : 0 –20 W.	10	11	10	6	12	19	**25**	8	13	6	7	13	**18**	17	16	9
" 9. N. 94 : 0 –15 W.	13	11	8	3	8	16	**22**	19	11	12	6	7	14	14	**18**	17
" 10. N. 331 : 0 –20 W.	17	11	5	9	6	6	19	**27**	7	6	10	10	17	**25**	17	8
" 11. St. Michael's, Azores	3	**42**	2	12	1	13	7	20	6	24	4	13	7	20	4	22
" 12. N. 150. Bermuda	6	5	8	17	23	27	11	4	18	12	7	5	14	**20**	11	13
" 12. N. 159 : 45 –70 W.	8	9	11	15	**21**	**21**	9	6	11	8	7	8	13	15	**21**	16
" 12. N. 164. Madeira	4	**69**	7	1	0	0	13	7	22	**32**	7	7	2	2	22	6
" 13. N. 64 : 45 –80 W.	2	16	**27**	**28**	2	11	4	1	12	**19**	13	12	10	12	9	13
" 13. N. 65 : 40 –50 W.	6	**37**	33	11	2	3	5	2	9	**25**	22	9	6	13	9	**7**
" 11. N. 69 : 15 –20 W.	**46**	28	6	3	1	5	3	7	21	**27**	17	9	5	3	8	9
" 13. N. 70 : 15 –45 W.	29	**34**	14	5	4	4	3	7	12	**24**	17	14	11	7	8	6
" 14. N. 28 : 15 –45 W.	13	30	28	8	6	6	4	5	24	**51**	17	3	1	1	1	2
" 17. N. 25 : 45 –55 W.	4	**55**	12	16	5	3	6	0,4	11	**67**	20	2	0	0	0	0
" 17. N. 31 : 10 –20 W.	0.5	0.5	2	14	**59**	19	4	1	**23**	21	8	4	6	8	15	16
" 17. N. 32 : 10 –55 W.	3	12	7	18	**39**	12	6	3	14	**48**	19	8	3	2	3	4
" 18. N. 24 : 18 –55 W.	1	3	11	**44**	33	6	2	0.5	8	21	25	**29**	10	4	1	2
" 19. N. 30 : 25 –30 W.	0.2	1	9	**73**	16	1	0.2	0.1	0.8	2	4	**71**	20	2	0.5	0.5
" 19. N. 33 : 11 –15 E.	0	0	8	35	**37**	14	5	0.4	0	0	8	21	**31**	26	13	0
" 20. N. 26. Ascension Is.	0	0	11	**55**	34	0	0	0	0	1	4	34	**57**	2	1	0
" 20. N. 28 : 10 –15 E.	0	1	19	26	**30**	18	4	1	0	0	0	**38**	11	**38**	4	9
" 21. N. 29 : 5 W. 13 E.	3	2	4	**32**	32	19	4	4	0	0	0	**100**	0	0	0	0
" 22. N. 30. St. Helena	1	5	1	**47**	33	9	1	3	3	1	3	**53**	34	5	1	0
" 23. N. 35 : 5 –15 E.	1	2	5	**45**	16	9	12	10	0	2	2	**63**	20	8	1	3
" 24. N. 36 : 5 –11 E.	3	3	4	**35**	19	12	12	11	0.3	0.5	2	**50**	30	10	5	2
" 25. N. 32 : 15 –20 W.	17	14	4	9	7	13	14	**23**	**18**	12	8	10	8	12	10	12
" 25. N. 40 : 15 –20 E.	4	12	20	**21**	11	12	12	8	1	4	14	26	**31**	14	8	3
" 26. N. 41 : 0 – 5 W.	15	5	6	5	11	12	**26**	20	8	3	3	6	13	17	**25**	**25**
" 26. N. 44 : 10 –15 E.	11	2	8	13	**21**	14	19	12	2	1	2	17	15	27	**28**	9
" 27. N. 19 : 55 –65 W.	19	10	2	3	12	23	11	19	17	10	4	4	11	22	14	18
" 27. N. 22 : 45 –50 W.	10	2	2	7	8	25	20	**27**	13	6	4	5	11	**22**	14	**24**
" 27. N. 32 : 10 –15 E.	...	...	...	...	...	...	...	...	17	3	0	3	15	**21**	18	**23**
" 27. N. 33 : 15 –20 E.	...	...	...	...	...	...	...	...	11	5	8	0	8	22	**23**	**24**

North of the regularly-established trades, there is a zone with prevailing northerly winds, especially in summer, in the eastern part of the ocean, as seen on maps, Plates 5, 6, and 7. To this zone the Azores belong.

At Funchal, Madeira, the trade-wind is well established in summer, but northerly winds prevail in winter, though not regular enough to be called trades.

The northerly winds of summer between 30° and 40° N. are N. W. rather than N., showing the influence of the heated surface of Southern Europe and Northern Africa. The African monsoon is to be observed in Z. 17, N. 31, and on Plate 5; the prevailing wind is N. from December to February and S. from June to August.

Under the same latitude in the middle of the ocean the N. E. trade is well established at both seasons. (See Plates 5, 6, and 7.) In zone 18 (0°–5° N.) the S. E. trade begins to prevail.

Along the coast of Africa the S. E. trade is very southerly, especially from June to August in latitude from 5° to 15° S. It must be remembered that a cold marine current flows along this course, and, therefore, the conditions must be like what prevail near the western coast of S. America. (See maps, Pl. 5, 6, and 7.)

The wind blows along this cold current, while on the coast it blows from the cold current to the land; this gives the S.W. winds of South Africa from 0° to 20° S. The only difference from S. America is, that no such high chain of mountains rises here near the coast. The belt of land under the influence of the sea-winds is more

extensive in Africa, and more heated, the ascending current is, therefore, more powerful, and thus the air from over the cold current is attracted with more force.

The mean direction of the wind in the tropical part of the Atlantic is as follows:—

	June to August.		Dec. to Feb.			June to August.		Dec. to Feb.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.		Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Zone 14. 60°–80° W.	S. 88° E.	.77	N. 73° E.	.51	Zone 23. 40°–45° W.	N. 66° E.	.36	N. 58° E.	.44
" 14. 40 –50 W.	N. 58 E.	.75	N. 63 E.	.55	" 23. 20 –25 W.	S. 65 E.	.46	N. 85 E.	.55
" 14. 15 –25 W.	N. 27 E.	.79	N. 51 E.	.58	" 23. 0 – 5 E.	S. 28 E.	.65	S. 29 E.	.63
" 15. 60 –80 W.	N. 89 E.	.84	N. 66 E.	.80	" 22. 35 –39 W.	S. 61 E.	.67	N. 72 E.	.72
" 15. 45 –50 W.	N. 60 E.	.77	N. 64 E.	.73	" 22. 10 –20 W.	S. 55 E.	.79	S. 61 E.	.80
" 15. 15 –25 W.	N. 42 E.	.91	N. 31 E.	.76	" 22. 0 –12½ E.	S. 26 E.	.84	S. 35 E.	.96
" 16. 45 –50 W.	N. 55 E.	.90	N. 49 E.	.86	" 21. 35 –39 E.	S. 50 E.	.79	S. 87 E.	.83
" 16. 30 –35 W.	N. 72 E.	.55	N. 68 E.	.87	" 21. 15 –25 W.	S. 48 E.	.92	S. 84° E.	.98
" 16. 15 –25 W.	N. 10 E.	.18	N. 37 E.	.77	" 21. 5 W. 13 E.	S. 6 E.	.63	S. 45 E.	.100
" 17. 45 –50 W.	N. 66 E.	.56	N. 50 E.	.91	" 20. 33 –35 W.	S. 46 E.	.89	S. 75 E.	.83
" 17. 30 –35 W.	S. 49 E.	.05	N. 65 E.	.38	" 20. 15 –20 W.	S. 47 E.	.96	S. 45 E.	.96
" 17. 10 –20 W.	S. 4 W.	.88	N. 9 W.	.31	" 20. 15 W. 10 E.	S. 11 E.	.68	S. 11 W.	.59
" 18. 40 –55 W.	S. 55 E.	.82	N. 73 E.	.74	" 19. 35 –45 W.	S. 48 E.	.85	S. 62 E.	.88
" 18. 30 –35 W.	S. 62 E.	.70	N. 87 E.	.69	" 19. 20 –25 W.	S. 43 E.	.92	S. 35 E.	.89
" 18. 10 –20 W.	S. 13 E.	.83	S. 29 E.	.34	" 19. 15 W. 11 E.	S. 6 E.	.73	S. 16 W.	.67

(See also Plates 5, 6, and 14.)

This table is so arranged as to show the corresponding latitudes north and south opposite to one another. It will be seen how much more regular are the southern trades, especially between 0°–15°.

In the northern hemisphere the trades are well established between 10°–15° N. in the middle and western part of the ocean; while near the African coast the winds are very variable, or better to say this latitude is divided in summer between the N. E. trade and the S. W. monsoon. In the corresponding latitude south, the S. E. trade is blowing regularly the whole year.

In latitude 5°–10° N. the S. E. trade is already established in the middle of the ocean from June to August and the African monsoon in full force further east. In the corresponding latitude in the southern hemisphere the trade is very regular. It is also blowing between 0°–5° N. with the exception of the months from December to February, when the mean direction is E. N. E. in the western part of the ocean, probably owing to the heating of a part of S. America, towards which the air is drawn from the ocean. (See also Map, Plate 6.)

The more easterly direction of the trades in the western part of the ocean is well marked, especially as concerns the S. E. trade. It is probably due to the rotation of the earth, which gives the winds more easting the further they advance.

There is no doubt that the winds of the Atlantic which blow near the coasts of America have traversed a great part of the ocean, and thus acquired more easting. As to the winds which blow in the eastern part of the ocean, they do not come from so far. The African continent rather attracts the winds than otherwise. It has before been shown that from 5° N. to 20° S. southwesterly winds blow the whole year on the ocean near the coast of Africa, as exhibited on Plate 7. Thus the trade which blows further to the west cannot come from Africa. It originates on the Atlantic Ocean itself, over the cold antarctic current flowing at some distance from the African coast.

Barometric observations are numerous on the Atlantic Ocean, and are important as giving us the key to the winds. (See Plate 14.) Unfortunately their tabulation and reduction is not all that can be desired. They are calculated without regard to longitude, and from 5° to 5° of latitude only. Thus we do not know the difference of pressure in the eastern and western parts of the ocean, although it must be great, especially in latitude from 20° to 35° N. and S. as shown by the great difference in the polar limits of the trades.

The Meteorological Institute of the Netherlands has undertaken the calculation of the barometric means of the Atlantic Ocean for every degree of latitude, distinguishing also, in the southern hemisphere, the outward and homeward voyages. This would give two sets of figures, one for the eastern and one for the middle part of the ocean, as the ships going to the East Indies take a course more to the westward, while on returning they go nearer to the coast of Africa. This expected publication will shed light on many obscure problems.

The most complete barometrical table for the Atlantic we now possess is published in the Pilot Charts. It is calculated from 5° to 5°, for every month. I have calculated from it the pressure of the two contrasting seasons, and have given in the following table the pressure observed on some islands and coast stations reduced to sea-level. (See also Plate 14.) The mean pressure is at 32° Fahr.

	June. July. Aug.	Dec. Jan. Feb.		June. July. Aug.	Dec. Jan. Feb.		June. July. Aug.	Dec. Jan. Feb.
Atlantic Ocean—			Atlantic Ocean—			32° 38′ N. 16° 36′ W.		
35°–40° N. . .	30.18	30.13	10°–15° S. . .	30.05	29.98	Funchal, Madeira .	30.11	30.15
30 –35 N. . .	**30.21**	**30.21**	15 –20 S. . .	30.10	30.03	32° 23′ N. 64° 40′ W.		
25 –30 N. . .	30.20	30.20	20 –25 S. . .	**30.14**	30.06	Bermuda Islands .	29.97	29.93
20 –25 N. . .	30.11	30.07	25 –30 S. . .	30.13	**30.07**	5° 24′ N. 0° 10′ E.		
15 –20 N. . .	30.01	30.03	30 –35 S. . .	30.09	30.03	Christiansb'g, Guinea	30.00	29.91
10 –15 N. . .	**29.93**	29.96	35 –40 S. . .	29.96	30.00	4° 56′ S. 55° 39′ W.		
5 –10 N. . .	29.96	29.92	40 –45 S. . .	29.92	29.94	Cayenne, Fr. Guiana	29.95	29.91
0 – 5 N. . .	29.96	**29.90**	45 –50 S. . .	29.72	29.72	33° 56′ S. 18° 27 E.		
0 – 5 S. . .	29.98	29.91	50 –55 S. . .	29.52	29.43	Cape Town, S. Africa	30.17	30.00
5 –10 S. . .	30.02	29.95	55 –60 S. . .	29.27	29.23	34° 37′ S. 58° 21′ W.		
						Buenos Ayres . .	30.15	30.01

The polar boundaries of the N. E. and S. E. trades are marked by a high pressure (at 30° to 35° N. and at 20° to 30° S.), while the space intervening between the two trades—the belt of equatorial calms and variable winds, has a comparatively low pressure. It should be remarked that this low pressure remains on the northern hemisphere, changing from 10° to 15° N. in our summer and from 0° to 5° in our winter. The air from north and south is attracted towards this belt of low pressure, and, as the conditions of the tropics are very uniform, the winds also are very regular.

A comparison of stations in the west and east of the ocean will show that pressure is generally higher in the east (as in Madeira compared with Bermuda, in Christiansburg compared with Cayenne, and Cape Town compared with Buenos Ayres). This is an additional cause for the easting of the trade-winds near the American continent.

Pressure is extremely low in the higher latitudes of the southern hemisphere.

Between 55° and 60° it is lower than around Iceland, the lowest known in the northern hemisphere. The great permanence and strength of the westerly winds in the southern temperate zone is explained by this. (See Plates 5, 6, and 14.)

NORTHWESTERN EUROPE.

The islands to the N. W. of Europe have still the climate of the Atlantic Ocean. Only one of them, the largest and most northerly, Iceland, has some of the characteristics of the polar zone.

Near Iceland, on account of the heated current of the gulf-stream, is the lowest pressure of the northern hemisphere, and though it is especially marked in autumn and winter it is also conspicuous at the other seasons. As is to be expected from a country in such a position, the winds are very changeable, according to the shifting of the centre of lowest pressure to the north and south. The equatorial winds, S. W., and the polar, N. E., prevail in turn.

The Faröe islands have prevailing S. W. winds at all seasons. This is even more the case at the Shetland islands, and in Great Britain generally, as is shown by percentages in the next table.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 5. N. 15. Stykkisholm, N. W. Iceland	4	17	**27**	11	13	11	9	9	2	**25**	**25**	15	12	13	6	2
" 6. N. 19. Reikiavik, W. Iceland	16	12	9	**21**	16	14	7	5	13	**29**	19	10	2	22	3	2
" 6. N. 21. Thorshavn, Faröe Islands	11	11	7	10	8	**26**	18	8	10	12	7	13	12	**23**	14	10
" 6. N. 22, 23. Shetland Islands	11	11	6	10	12	**20**	**19**	12	12	8	4	12	13	**25**	16	10
" 7. N. 27. W. Scotland, 58°–59° N.	10	9	11	6	9	**26**	18	11	7	7	8	7	13	**30**	18	10
" 7. N. 29, 31. W. Scotland, 56°–58° N.	5	8	11	7	11	**23**	**23**	12	6	11	8	12	7	**24**	22	9
" 7. N. 33. W. Scotland, 55°–56 N.	6	9	9	9	9	**23**	**23**	12	5	10	10	10	6	**24**	22	11
" 7. N. 39 and 43. E. Scotland, 56°–58° N.	8	9	11	9	13	**22**	16	12	8	6	5	8	10	**28**	23	12
" 8. N. 39. Ireland, 53°–54° N.	8	11	7	9	8	13	**24**	18	7	5	6	10	13	**17**	**24**	18
" 8. N. 44 and 48. Ireland, 51°–53° N.	8	5	4	7	10	20	20	**25**	8	11	6	11	13	**22**	13	16
" 8. N. 113. Greenwich, S. E. England	10	13	5	6	9	**36**	13	7	11	11	6	6	12	**32**	12	**7**

There is little difference between the winds in winter and summer, from Faröe islands to southern England. A very slight one only can be detected in the greater number of W. and N. W. winds in summer. This applies not only to Great Britain, but also to the greatest part of northern and central Europe. It is due to two causes: First, the belt of highest barometer is more northerly in summer than in winter; and second, part of the air is attracted towards the depression of Central Asia.

In Great Britain the influence of the last cause is very small, as Central Asia is too distant, and the depression about Iceland so near, that it must act very powerfully even in summer. But the further we advance eastward the greater is the influence of the depression in Central Asia, and consequently the greater the difference between the direction of the wind in winter and summer. The next table gives the mean direction of the wind in Great Britain and Iceland.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction	Ratio of resultant.	Mean direction.	Ratio of resultant.
Iceland, Stykkisholm	S. 87° E.	.45	S. 74° E.	.23	S. 68° E.	.33	S. 75° E.	.35
" Reikiavik	N. 78 E.	.21	N. 17 E.	.06½	N. 54 E.	.26	N. 80 E.	.19
Thorshavn, Faröe Islands	N. 14 E.	.03	S. 66 W.	.21	N. 77 W.	.13	S. 51 W.	.16
W. Scotland, 58°–59° N.	S. 36 W.	.13	S. 70 W.	.22½	S. 50 W.	.26	S. 55 W.	.34
" 57°–58° N.	S. 58 W.	.28	S. 53 W.	.35¼	S. 51 W.	.36	S. 55 W.	.40
E. Scotland, 57°–58° N.	S. 67 W.	.18	S. 65 W.	.18½	S. 53 W.	.34	S. 62 W.	.40
Ireland, Dublin, Phœnix Park	N. 70 W.	.10½	S. 88 W.	.31	S. 73 W.	.31	S. 61 W.	.36½
" Cork	S. 54 W.	.13	S. 88 W.	.39	S. 70 W.	.19	S. 64 W.	.20½
England, 52°–53° N.	N. 2 W.	.08	N. 81 W.	.29	S. 84 W.	.19	S. 75 W.	.31
Greenwich	N. 57 W.	.02½	S. 61 W.	.28	S. 69 W.	.14½	S. 55 W.	.25
England, 51°–52° N.	N. 45 W.	.08	N. 87 W.	.26½	S. 73 W.	.16½	S. 72 W.	.21

(See also maps, Plates 5, 6, and 9; and map of Isobars, Plate 14.)

The ratio of resultant is less in spring than at other seasons. This is caused by the great increase of pressure in the Polar region, as has been shown before. N. E. winds are oftener experienced in spring than at other seasons.

I must further remark that the character of the winds in Great Britain and the adjoining islands is strictly oceanic *i. e.*, such as would be found in the same latitudes on the oceans. The relative position of the land and sea have scarcely any influence. This is due, first, to the great difference of pressure between north and south, and the great strength of the winds which is the result, so that local causes are comparatively unimportant; second, to the small extent of land, which, being besides pervaded by the influence of the sea, is neither much more heated in summer, nor much more cooled in winter than the surrounding ocean. (See Plates 9 and 12.)

The conditions of the Scandinavian Peninsula are very different. It is by itself a large body of land. Besides this, the high mountain chain rising near its western coast is a great barrier to the influence of the Atlantic Ocean on the interior. The result is a much more continental climate than could be expected from a country so near to the Atlantic Ocean.

In many respects the physical features resemble those of Alaska, where the contrast between the mild, equable climate of the coast and the excessive seasons of the interior is equally great. The winds of the Scandinavian Peninsula are shown in the two following tables; in the first by percentages, and in the second in direction.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 7. N. 56. Christiania, S. Norway	12	16	9	16	**30**	8	4	5	**29**	30	6	8	12	4	3	8
" 6. N. 27. Christiansund, W. Norway	14	**25**	6	7	3	10	**24**	11	3	4	10	**29**	12	19	17	7
" 6. N. 26. Dovre, Inner Norway	16	4	2	5	**40**	6	4	23	5	2	3	6	**53**	11	6	13
" 5. N. 19. Bossekop, N. Norway	27	40	0	0	7	20	0	7	1	3	30	**42**	10	6	4	3
" 4. N. 18. Hammerfest, N. Norway	10	7	**17**	11	**17**	6	13	17	7	3	9	**31**	28	8	7	7
" 4. N. 19. Vardö, N. Norway	12	15	7	**26**	8	5	2	**24**	5	9	5	11	5	46	8	12
" 3. Mossel Bay, Spitzbergen	...	...	...	...	...	...	...	...	1	1	2	**45**	2	36	3	5
" 3. Ice Fjord, Spitzbergen	...	...	...	...	...	...	...	...	12	13	19	**21**	11	9	8	7
" 3. Hecla Cove, Spitzbergen	15	10	19	15	5	7	14	15								
" 4. N. 16. Bear Island (between Norway and Spitzbergen)	**19**	13	10	9	14	8	15	13	4	13	**31**	17	12	11	5	6
" 5. N. 23, 24, 25. N. Sweden	15	12	13	13	**23**	11	8	5	15	11	5	10	**22**	15	13	8
" 6. N. 35. E. Sweden	9	5	9	7	**31**	17	10	12	14	8	7	8	**20**	18	14	11
" 7. N. 90. S. E. Sweden	12	9	10	10	13	15	**17**	10	13	10	7	8	13	**20**	16	12
" 7. N. 89. S. W. Sweden	9	8	8	8	**20**	19	**20**	18	10	12	14	10	17	**19**	11	10
" 7. N. 68. Lund, S. Sweden	7	7	7	12	12	17	**21**	18	7	8	10	13	14	**22**	14	11

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Christiania, Southern Norway	N. 57° E.	.24	S. 42° E.	.28	N. 39° E.	.32	N. 31° E.	**.41**
Sandösund, Southern Norway	N. 8 W.	.05	S. 49 W.	.29	S. 49 W.	.09	N. 39 W.	.08
Christiansund, Western Norway	S. 31 W.	.03	N. 20 W.	.23	S. 13 W.	.24	S. 3 W.	.32
Dovre, Inner Norway	S. 18 W.	.08	S. 48 W.	.08	S. 14 W.	.16	S. 15 W.	.19
Hammerfest, Northern Norway	S. 23 E.	.19	S. 31 E.	.02	S. 12 E.	.24	S. 21 E.	.42½
Vardö, Northern Norway	N. 75 W.	.19	N. 53 E.	.14	S. 53 W.	.25	S. 50 W.	.38
Bossekop, Northern Norway	S. 43 E.	.47	N. 34 E.	.25	S. 60 E.	.24	S. 53 E.	.61
Haparanda, Northern Sweden	S. 25 E.	.12	S. 24 E.	.11½	S. 15 E.	.06	S. 30 E.	.09
Southwestern Sweden	S. 72 W.	.01	S. 57 W.	.25½	S. 6 W.	.15	S. 14 W.	.09½
Southeastern Sweden	N. 5 W.	.06½	S. 71 W.	.14½	S. 66 W.	.12½	S. 83 W.	.10½

In winter the whole coast of Norway has monsoon winds, blowing from the land to the sea, they are N. and N. E. at Christiania, S. E. at Christiansund, Bossekop and Hammerfest, and S. W. at Vardöe. In summer the conditions are reversed.

This was shown some years ago by the best authority in these matters, Prof. H. Mohn.[1] He is of the opinion that the winds are deflected about 90° to the right of the direction they would have if they blew directly from the land in winter and from the sea in summer.

It must, however, be observed that in this result the number of observations alone is taken into account. The storms on the Atlantic coast of Norway are very violent, and the winds during their prevalence mostly S. and W. A south wind should prevail in Norway, taking into account the strength of winds and aside from local influences.

The high station of Dovre, in the interior, has largely prevailing S. winds. In this we see the influence of the high pressure to the S. and in the interior of the continent and of low pressure on the ocean to the W. and N. (See Plates 9 and 14.)

In northern Norway the winds are variable in summer and decidedly from the S. in the winter. In the latter season the general distribution of pressure in the

[1] Oversigt of Norges Klimatologi. See also Norsk Meteorologisk Aarbog.

surrounding countries, and the local monsoon influence, act in the same direction, as the land is to the S., the ocean to the N. In summer they counteract one another. Besides this, the character of the Arctic Ocean must be considered. It is traversed by a warm current, and at no time of the year do icebergs approach the coast of Norway. Even in the summer the temperature of its waters is higher than that of the air on the land. On such a sea a low pressure must prevail, and its monsoon-producing influence in summer cannot be compared with that of an ice-laden sea.

In northern Sweden the wind has also a southerly direction. The Gulf of Bothnia has but very little influence, being a small body of water and frozen to a great extent in winter, otherwise we would have northerly winds in winter, while the Arctic Ocean attracts the air so strongly that no other influence is to be considered in comparison. The S. winds of summer may be partly sea-winds.

In southern Sweden the winds are S. W. in the winter, and W. in summer. The influence of the low pressure in the interior of the continent begins to be felt here at the latter season. (See Plates 5, 6, 9 and 14.)

Bear Island, between Norway and Spitzbergen, lies N. of the warm current of the Gulf-stream. Accordingly the Polar current (E.) is largely prevailing in winter, while the winds of summer are more variable. Bear Island has a position very like that of Iceland, yet it is more clearly north of the warm ocean-current with its low pressure. Besides, at times the island is surrounded by extensive ice-fields, and the temperature sometimes sinks very low over them, and consequently pressure increases.

Iceland and Bear Island are important stations, proving the existence of prevailing polar winds N., N. E., E. in the waters north of Europe, and north of the warm current of the Gulf-stream, while all stations in the extreme north on the continent of Europe still have equatorial winds (S., S. W., W.). Thus, the division line between the two systems of winds is proved to be the belt of low pressure along the warm ocean-current. (See maps, Plates 5, 6 and 7.)

The winds of Spitzbergen seem to be more influenced by the relative position of land and sea than those of Bear Island. In winter they blow from the land, as is seen by the observations of Mossel-Bay, on the N. shore of the principal island, and Ice-Fjord on the S. shore of the same.

CENTRAL EUROPE.

Southwesterly and westerly winds prevail also in the rest of western Europe, that is, Denmark, Germany, the Netherlands, Belgium and Northern France.

This is evident from the following table of percentages:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Northern Germany—																
Zone 8. N. 216. Königsberg	8	8	18	7	4	13	**32**	10	4	9	18	9	7	**23**	20	9
" 8. N. 197. Berlin	14	2	15	4	12	6	**42**	4	14	2	19	3	29	8	23	2
" 8. N. 178. Kiel	7	8	10	7	8	**24**	22	15	2	6	13	17	14	**22**	18	8
Denmark—																
Zone 7. N. 57. Tarum	4	4	5	11	12	18	**27**	17	4	12	7	18	13	**26**	14	5
" 7. N. 63. Copenhagen	7	7	7	12	12	17	**21**	18	7	8	10	13	15	**22**	15	11
Zone 8. N. 196. Saxony	8	8	7	7	4	14	**28**	25	4	9	6	14	8	19	**23**	17
" 8. N. 277. Mannheim	10	7	3	11	17	18	13	**21**	9	9	3	16	19	**20**	9	16
" 8. N. 190. Northern Bavaria	5	9	6	12	5	15	**24**	23	6	8	6	19	7	**20**	**20**	13
" 8. N. 312. Hohenpeissenberg	6	13	4	10	4	25	**28**	9	8	17	5	8	4	22	**26**	11
" 9. N. 296. Western Bavaria	9	6	7	6	6	14	**31**	20	6	9	11	10	10	**17**	**26**	10
" 9. N. 126. Eastern France	11	9	4	4	11	**21**	**21**	18	11	9	4	10	**17**	15	**19**	14
" 8. N. 151. Southern Holland	8	11	5	8	8	**32**	12	15	4	14	8	10	12	**29**	13	10
" 9. N. 141. Brussels	8	9	7	5	12	**35**	14	9	4	8	8	7	17	**33**	14	8
" 9. N. 116. Paris[1]	11	10	5	5	11	21	**24**	13	10	11	7	10	17	**19**	16	10
" 9. N. 109. Normandy, Inland Stations	8	10	10	4	13	13	**29**	12	10	10	14	7	13	12	**21**	12
" 9. N. 110. Coast Stations	11	15	8	4	6	17	18	**21**	13	9	12	9	11	**20**	11	14

This is still a region of the undisputed prevalence of westerly winds. What may be noticed in S. Sweden is seen here in nearly all the stations: the winds in summer incline somewhat to the N. W. Kämtz was the first to notice the opposite course taken by the N. W. and the S. E. winds on the continent of Europe, the first being most frequent in summer, the last in the winter.[2] This is caused by the contrasts of temperature and pressure of the interior of the continent, and of the Atlantic Ocean, the influence of the land being conspicuous in winter, that of the ocean in summer.

The S. W. winds are most numerous in Belgium and Holland, while this is less the case in southern Germany, where the W. winds prevail. This is partly caused by the influence of the Alps, which do not give free access to S. W. winds, while those from the west reach Germany without impediment. The direction of the winds in this region is given in the following table:—

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Denmark—								
Tarum	S. 60° W.	.09	S. 70° W.	.39	S. 11° W.	.26	S. 22° W.	.28
Copenhagen	S. 10 W.	.09	S. 72 W.	.28	S. 27 W.	.25	S. 34 W.	.23½
Brussels	S. 9 W.	.01	S. 62 W.	.32	S. 21 W.	.36	S. 41 W.	.40
S. Holland	N. 55 W.	.11	S. 73 W.	.29	S. 48 W.	.18	S. 40 W.	.28½
N. Holland	N. 60 W.	.12½	S. 85 W.	.32	S. 49 W.	.17	S. 25 W.	.26
Northern Germany—								
Hamburg	N. 78 W.	.12	S. 88 W.	.39	S. 52 W.	.27	S. 39 W.	.24
Kiel	N. 67 E.	.04	S. 79 W.	.30	S. 23 W.	.23	S. 23 W.	.31
Berlin	S. 64 W.	.07	S. 89 W.	.30	S. 70 W.	.20	S. 20 W.	.22
Königsberg	N. 28 W.	.05	N. 83 W.	.20	S. 7 W.	.18	S. 42 W.	.18
Saxony	N. 67 W.	.15½	N. 70 W.	.41	S. 71 W.	.27	S. 73 W.	.30
W. Bavaria	N. 87 W.	.14	N. 80 W.	.40	S. 73 W.	.23	S. 66 W.	.23½
E. France	N. 60 W.	.21	N. 87 W.	.36½	S. 53 W.	.17	S. 76 W.	.20½
Paris	N. 77 W.	.11	S. 81 W.	.33½	S. 42 W.	.23½	S. 41 W.	.22½
Normandy, Inland Stations	N. 61 W.	.11	N. 87 W.	.28	S. 33 W.	.14½	S. 85 W.	.12

[1] Result of forty years' observations, calculated by Haeghens, Annuaire de la Société Météorologique de France.

[2] Repertorium für Meteorologie, v. ii.

(See also Plate 9.)

The N. W. winds of spring in most of the stations of Western Europe must be noticed, especially in stations near the coast of the Atlantic Ocean or the North Sea. The mean direction of the wind in summer is more northerly than in winter.

Central and Southern France, Northern Italy, Switzerland, and the western provinces of Austria are a border-land between two different systems of winds, southerly or westerly prevailing in the N. of this region, and northerly in the S. Still we must expect to find the winds very much influenced by locality in such mountainous countries. The following are the percentages of the winds in the countries mentioned.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 8. N. 362. S. W. France	15	4	4	13	6	8	21	**27**	8	4	5	18	**19**	11	**19**	17
" 9. N. 126. E. France 45°–46° N.	**34**	4	3	3	20	10	11	14	**32**	5	4	5	24	9	8	13
" 10. N. 366. Orange (S. E. France)	**62**	1	1	1	24	4	4	4	**54**	3	2	4	11	4	2	21
" 10. N. 367. Marseilles	0	0	1	12	4	18	**37**	29	0	1	10	16	2	5	11	**55**
" 10. N. 373. Parma	13	16	16	5	3	18	12	17	12	8	14	5	2	9	20	**31**
" 10. N. 374. Bologna	8	8	**22**	9	5	9	**25**	15	3	3	6	2	3	5	**59**	19
Switzerland—																
Zone 9. N. 178. W. Switzerland	**36**	12	2	4	17	18	5	6	23	16	4	4	16	**28**	6	5
" 9. N. 172. Neuchatel	3	**29**	11	5	2	**31**	11	8	2	28	7	1	0	**42**	12	8
" 9. N. 171. Chaumont	14	**26**	9	3	1	12	14	22	6	19	1	0	0	**55**	8	12
" 9. N. 196. Northern Switzerland	11	17	12	5	4	15	**20**	16	3	11	7	5	4	**36**	26	8
" 9. N. 192. Uetliberg	24	1	1	0	0	27	**40**	7	5	0	0	0	0	30	**66**	0
" 9. N. 218. Rigi-Kulm	6	10	9	2	20	1	**40**	13	0	2	6	4	15	4	**63**	6
" 9. N. 228. Lugano	17	**32**	2	20	24	6	0	0	**42**	**43**	0	7	4	2	0	3
" 9. N. 246, 247. Bellinzona / Mendrisio	**52**	14	3	7	11	3	5	4	**60**	13	1	2	4	1	6	12
Zone 9. N. 321. Trieste	12	2	**40**	2	16	2	25	1	18	4	**58**	1	10	1	8	0
" 10. N. 378. Ragusa (Dalmatia)	25	**31**	6	21	0	3	0	14	21	**40**	11	20	1	0	2	5
" 9. N. 320. N. Illyria	10	9	6	10	15	17	**21**	12	15	8	8	7	6	18	**21**	18
" 9. N. 317. Hoch-Obir	10	3	2	6	11	**36**	20	12	16	1	2	6	6	**24**	23	21
" 9. N. 337. Vienna and Schoenthal	8	6	7	9	7	31	2	**35**	7	14	2	19	8	**24**	4	22
" 9. N. 340. Moravia	8	9	6	9	6	10	19	**33**	11	7	4	17	6	8	12	**34**
" 8. N. 204. N. W. Bohemia	5	10	6	8	3	**30**	19	18	3	16	8	13	2	**26**	19	13

In Southern France N. W. and N. winds may be said to predominate, and not only are they the most frequent but also the strongest. They are known under the name of *Mistral.* As early as in 1861[1] Renou traced the isobaric lines of France, and showed that the highest pressure was found in the centre of the country near Limoges. Reduced to sea-level it amounted to 764 millimetres (30.08 inches), to the south it is less. In winter the temperature along the coast from Marseilles to Livorno is much higher than in the surrounding country, this being probably the cause of the lower pressure. (See Plate 14.) In summer the stony, treeless plains on the lower Rhone are so very much heated, as to attract the air of the surrounding country. It comes from the Atlantic, up the valley of the Garonne, as a N. W. wind, and descends towards the Mediterranean near Cette. It will be seen from the table that S. W. France has prevailing N. W. winds only in summer, while in winter southerly winds are frequent.

[1] "Annuaire de la Société Méteorologique de France," of that year.

The valley of the Rhone is another outlet for the air flowing towards the Provence. Here nearly all winds take a N. or S. direction, *i. e.*, flow in the direction of the valley; but the first are largely in excess, as is shown by the observations in Eastern France (from 45°–46° N.), and especially at Orange, where 62 per cent. of all the winds in summer and 54 per cent. in winter come from the N.[1] (See Plate 9.)

In the country further east the Alps seems to form a boundary between the prevailing W. and S. W. winds to the north, and N. winds to the south, at least in autumn and winter. This is caused, as has been previously said, by the relatively higher pressure of the country around the Alps, and the relatively low pressure on the Mediterranean. Unfortunately very few results of observations in Northern Italy could be obtained in the libraries of Washington, though many are known to exist. Besides, the observations of Milan and some other stations were reduced to the four components (N., E., S., W.), so that percentages calculated from them would not be immediately comparable to the observations of other places where eight directions are given.

The winds of Parma seem to show what takes place in the lowlands of N. Italy. In winter the prevailing wind is N. W., in summer nearly all directions are represented equally. Bologna seems to have monsoon winds W. (from the land) in winter, and E. (from the Adriatic) in summer. (See Plate 9.)

The stations of Switzerland S. of the Alps (Lugano, Bellinzona, Mendrisio) have largely prevailing N. winds, and a very great number of calms.

The admirable system of meteorological observations begun in Switzerland in 1864 has already given much information as to the winds on mountains and high passes. Of these, the observations on isolated mountains are most valuable, as on high passes the direction is often very much influenced by the surrounding mountains.

The direction on high peaks is generally the same as in the surrounding country, but the character is much more marked, one or two directions prevailing to a greater extent than at the foot of the mountains, and the intervening winds being less numerous.

The Chaumont is situated in the Jura Chain just above Neuchatel. Here we have already a slight prevalence of northerly winds in summer, which is continued in the valley of the Rhone, in Southern France. In the winter S. W. winds prevail to a very great extent on the Chaumont, much more than in Neuchatel and in Western Switzerland generally.

The winds of N. Switzerland are very like those of Germany, that is, westerly at all seasons, as shown on Plate 9, but rather S. W. in winter, and W. N. W. in summer. This is also the case on two isolated mountains of this region, the Uetliberg (near Zurich) and Rigi-Kulm, only the proportion of westerly wind is much greater on the mountains.

Chaumont, Uetliberg, and even Rigi-Kulm, are scarcely high enough to have

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[1] Count Gasparin, Fournet, and Ch. Martens were among the first to draw attention to this prevalence of northerly winds in Southern France.

another system of winds than those of the plains and valleys of Switzerland. The winds of these isolated mountains rather give us an idea of what would be the case if local influences were eliminated. The high peaks of the Alps would show us a different system of winds. The following are the winds of Switzerland.

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
W. Switzerland	N. 29° W.	.15	N. 27° W.	.15	N. 15° W.	.09½	S. 78° W.	.09½
Neuchatel	N. 55 E.	.05½	N. 69 W.	.03	N. 46 E.	.07½	S. 80 W.	.14
Chaumont	N. 37 W.	.17½	N. 11 W.	.28	N. 31 W.	.16	S. 73 W.	.31
Geneva	N. 26 W.	.21	N. 24 W.	.20	N. 8 W.	.13	S. 76 W.	.04
Northern Switzerland	N. 76 W.	.09	N. 46 W.	.11	N. 74 W.	.05½	S. 68 W.	.24
Zurich	N. 16 W.	.14	N. 21 W.	.22	N. 22 W.	.17	S. 89 W.	.22
Uetliberg	N. 87 W.	.29	N. 81 W.	.16½	N. 85 W.	.22	S. 79 W.	.43½
Zug	S. 82 W.	.09½	N. 44 W.	.07½	N. 76 W.	.03½	S. 75 W.	.14
Rigi-Kulm	S. 65 W.	.26	S. 89 W.	.18½	S. 55 W.	.27	S. 76 W.	.44
Lugano	N. 63 E.	.14½	S. 84 E.	.08½	N. 42 E.	.07	N. 27 E.	.14
Bellinzona	N. 2 E.	.18	N. 15 E.	.06	N. 24 E.	.08½	N. 7 E.	.16
St. Bernard	N. 45 E.	.32	N. 45 E.	.38	N. 45 E.	.15½	N. 45 E.	.27
Simplon	N. 37 W.	.39½	S. 8 W.	.17	S. 20 W.	.27	S. 46 W.	.24
Julier	S. 28 W.	.17½	S. 52 W.	.40½	South	.19½	S. 5 E.	.16
Bernina	N. 25 E.	.37½	N. 23 E.	.32	N. 2 E.	.33½	N. 31 E.	.45½

How much the winds are influenced by the locality on high mountain-passes, is seen by comparing the Julier and Bernina, both situated in E. Switzerland, but having nearly opposite winds, especially in spring and autumn.

The winds in winter are remarkably like in Northern and Western Switzerland, the extreme difference being only 21°. The ratio of resultant is greatest in the high stations, next in Northern Switzerland, and least at Geneva, where it is only 4. This last place is nearly on the border of the north winds in S. E. France. There are greater differences in summer, yet the mean direction is mostly between the N. and W. (See Plate 9.)

The western provinces of Austria have well-marked westerly winds in the N. (Bohemia, Moravia, Vienna), belonging, in part, to the same zone as those of Germany. This is also the case in the mountainous country (N. Illyria), and, as is the case in Switzerland, the high station of Hoch-Obir, 7016 feet above the sea, has a greater prevalence of westerly winds than the stations in the valleys.

On the Adriatic coast N. E. and E. winds prevail, being, as in S. France, directed from the land towards the sea. As there the prevailing wind is the strongest, so it is here.

The *Bora* of the Dalmatian coast is much feared by the seamen as a strong and cold wind. Another wind often blowing here is the *Sirocco* from the S. or S. E. It is originally a S. W. wind, but it is deflected by the highlands bordering the Adriatic, and takes a course parallel to the shores. The following are the directions of the wind in this region:—

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
N. Illyria	S. 66° W.	.21	S. 68° W.	.23	S. 68° W.	.16½	N. 71° W.	.28½
Hoch-Obir	S. 82 W.	.34	S. 65 W.	.22	S. 81 W.	.33	N. 83 W.	.49
Trieste	S. 83 E.	.25½	S. 74 E.	.16½	S. 80 E.	.38	N. 79 E.	.52
Ragusa	S. 86 E.	.45	N. 38 E.	.43	S. 70 E.	.34	N. 52 E.	.55
S. W. Bohemia	S. 87 W.	.26½	S. 80 W.	.45	S. 83 W.	.47	S. 86 W.	.40
N. E. Bohemia	N. 46 W.	.10½	N. 68 W.	.25	N. 83 W.	.19	S. 71 W.	.08
Moravia	N. 51 W.	.27	N. 61 W.	.34½	N. 79 W.	.21½	N. 51 W.	.25
Vienna	N. 70 W.	.21	N. 70 W.	.38	N. 65 W.	.24	S. 85 W.	.23

(See also Plates 5, 6, and 9.)

SOUTHERN EUROPE.

A belt of high pressure in the summer months is to be found about 40° N. in the Mediterranean. South of it we must expect to find N. and N. E. winds. Yet, as generally the pressure increases towards the W., that is, the eastern part of the Atlantic Ocean, the winds of summer are rather due N. and N. W. The air is attracted towards the Sahara Desert and other hot parts of Africa. The following are the percentages:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 11. N. 182. Lisbon	**41**	22	4	2	2	12	7	11	27	**33**	9	1	6	8	10	6
" 10. N. 335. N. W. Spain	10	**41**	0	0.5	3	23	5	17	10	28	0.4	4	10	**32**	5	11
" 10. N. 343. N. Spain	9	17	4	9	7	3	15	**35**	10	12	7	**23**	10	7	10	**22**
" 11. N. 184. S. W. Spain	14	8	3	6	**26**	**27**	12	4	**22**	12	0	10	**23**	**26**	2	4
" 11. N. 196. S. E. Spain	4	12	20	**30**	10	8	11	6	6	9	5	9	7	17	**28**	19
" 10. N. 375. Rome	14	10	6	4	**21**	**21**	**20**	4	**33**	21	12	6	13	7	5	3
" 11. N. 205. Malta	11	22	7	9	3	11	7	**30**	5	16	8	10	7	**22**	11	**21**
" 11. N. 208. Janina	**30**	15	10	10	3	1	3	**27**	7	7	10	**34**	18	2	10	12
" 11. N. 206. Corfu	**22**	8	9	18	5	5	10	**23**	12	13	15	**31**	5	4	5	15
" 11. N. 208(a). Athens	17	**31**	5	2	16	21	3	5	**26**	19	4	5	15	12	11	8

The Mediterranean region S. of 40° L. N. belongs most decidedly to the sub-tropical belt; that is, the summer is nearly or quite rainless, and the more we advance southward, the longer is this rainless period, extending to about six months at Malta and in Algeria, and to nine months in Lower Egypt, while the whole year is nearly rainless in the Sahara S. of 30°, as well as in Upper Egypt. In these conditions, especially when considering a region not deficient in vapor of water, as the shores of the Mediterranean, the absence of rain in summer indicates in our hemisphere very prevailing northerly winds. If even the wind-vane indicates southerly winds, we may be sure that they are merely local sea-winds, or winds deflected from their course by mountain chains, etc., provided that the places where they occur have the rainless summer of the sub-tropical zone. Now this is

the case in S. E. and S. W. Spain, where the winds are southerly in summer, coming from the Mediterranean and the Atlantic Ocean. Yet we know that scarcely any rain falls in summer there; for example, in Gibraltar no rain was observed in July and August, and only 0.1 inch in June, while $27\frac{1}{2}$ inches fall in the winter months. (See Plates 5, 6, and 9.)

In Lisbon, Malta, Corfu, and Athens, we see the extreme prevalence of northerly winds in summer, such as characterize the sub-tropical zone. Rome and Naples again have southwesterly winds in summer, but, according to the yearly period of their rains, they belong to the sub-tropical zone, though not so decidedly as Southern Portugal and Spain, as well as Greece.

The northerly winds of summer were known to the ancient Greeks. Aristotle mentions them under the name of Etesian winds. In their gentle regular flow, they resemble the trades, but their direction is more northerly than those of true trades.

The prevalence of northerly winds is not so decided in winter, though they are more frequent than others in the greater part of this region. They are, however, interrupted from time to time by southerly winds which bring rain.

The northern part of Spain does not belong to the sub-tropical zone, yet the N. E. and N. W. winds prevail in summer. For the northern coast of Spain it is a sea wind coming from the Bay of Biscay.

EASTERN EUROPE.

Northeastward from the Mediterranean region just considered, and southeastward from Germany and the western provinces of Austria, there is a region of prevailing N. W. winds—it comprises Hungary, Transylvania, the Danubian principalities, and S. W. Russia. The following table gives the percentages of winds in this region:—

		Summer.								Winter.							
		N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 9—																	
Hungary, N. 343.	Buda. (Ofen)	23	13	6	5	9	10	6	**29**	**28**	12	5	9	12	13	4	18
N. 346.	Debreczin	**45**	6	8	4	28	1	2	5	**42**	4	9	4	30	5	1	5
N. 347.	Hermannstadt, Transylvania.	12	8	2	21	0	6	8	**42**	9	7	3	22	6	11	6	**36**
S. W. Russia—																	
N. 351.	Kischinev	14	6	2	6	8	9	5	**50**	22	7	2	11	9	12	6	**32**
N. 352.	Dniestrovski Znak	**22**	12	11	20	13	7	2	13	**22**	16	16	13	7	8	7	·11
N. 353.	Odessa	**25**	5	7	10	**25**	5	10	13	**17**	14	10	9	15	10	13	12

The prevailing winds at both seasons are N. or N. W., and at Debreczin, Hermannstadt and Kischinev, they are very largely prevailing. The mean direction is as follows:—

	Spring.		Summer.		Autumn.		Winter.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Buda	N. 28° W.	.26	N. 23° W.	.32½	N. 24° W.	.23	N. 14° W.	.21
Hermannstadt	S. 87 W.	.15	N 34 W.	.30	S. 21 E.	.15	N. 57 W.	.18
Kischinev	N. 61 W.	.25	N. 46 W.	.49½	N. 58 W.	.25	N. 42 W.	.32½
Odessa	S. 37 E.	.17½	N. 71 W,	.06	N. 65 E.	.09	N. 20 W.	.08

The motion of clouds observed at Hermannstadt gives in the summer a wind N. 56° W. mean direction, with a ratio of .39, and N. 59° W. in winter, ratio .39. So that the ratio is greater at both seasons than that of the lower current. At the first four stations, the prevalence of N. and N. W. winds is greater in summer than in winter. Besides in the summer the winds are more westerly, and more northerly in winter. The resultant for each month is as follows at Kischinev:—

	Mean direction.	Ratio of resultant.		Mean direction.	Ratio of resultant.		Mean direction.	Ratio of resultant.
January	N. 30° W.	.30	May	N. 76° W.	.24	September	N. 44° W.	.40
February	N. 58 W.	.33½	June	N. 50 W.	.43½	October	N. 79 W.	.21½
March	N. 61 W.	.29	July	N. 46 W.	.60	November	N. 66 W.	.17
April	N. 46 W.	.24	August	N. 41 W.	.45	December	N. 37 W.	.36

The months of March to May, October and November, have a much smaller amount of N. W. winds than the others. At Odessa and Hermannstadt where the prevalence of N. W. winds is generally less marked, the mean direction is not between N. and W. in spring and autumn. That it should be N. W. in summer in Odessa, though with a small ratio, is a proof of the strength of the N. W. current in these regions. (See Plates 5, 6, 9, and 14.). Odessa is so situated that it should have S. W. monsoon winds in summer, as the Black Sea lies southward, and the steppes around the city are highly heated at this season. Yet this monsoon is but slightly felt, while sea-winds are prevailing in the coast stations of the Crimea and on the shores of the Sea of Azof.

A glance at the map (Plates 5 and 6) will show that the region now considered has a great similarity of position with that of southern France. The relation to the N. W. part of the Mediterranean in the last-named region, and the N. W. part of the Black Sea in this, is the same. The result, prevailing N. and N. W. winds, is also similar.

I have already defined the position of the belt of high pressure which I called the great Axis of the continent, which reaches in winter from Southern Siberia to Central France, through a great part of the Asiatic-European Continent, and also influences to the Caspian, Black and Mediterranean Seas. (See Plate 14.) On these regions the temperature is much higher, and the pressure lower, than on the continents to the north. This gives prevailing easterly winds on the northern shores of the Caspian and Black Seas. Now the regions we are considering are in a

peculiar position towards the southern seas. They are separated from the Mediterranean and Adriatic by some high ranges of mountains. If we suppose a N. E. wind at Kischinev, directed towards the Adriatic, it would have first to pass across the Carpathian mountains, and then, besides others, over the high chains of Dalmatia and Bosnia, towards the Ægean Sea where there are also mountains—the Balkan chain, leaving but the narrow aperture of the Bosphorus, where a N. E. wind prevails during the year.[1] Hungary even, though situated to the S. W. of the Carpathian, has high mountains intervening between it and the Adriatic. Toward the Black Sea the air can arrive more easily along the Danube. There are also some low though narrow passes between Transylvania and Wallachia. Thus we have here a region of high pressure in winter, with a comparatively warm sea lying towards the E. and S. E. The movement of air in this direction is easy. The result is a prevalence of N. and N. W. winds, as shown by the map, Plate 6.

In the summer the pressure is low in the interior of the continent and very high in the western Atlantic, between 30° and 40° N. West winds are the result of this. It was shown that they prevail in Germany and Switzerland, and the further eastward the more this must be the case. Thus we have the air from the Atlantic flowing over the Mediterranean as a north wind towards the depression in Africa, and over the Carpathian region as N.W. towards the Asiatic depression. (See Plate 5.)

In autumn, especially in September and October, the conditions change. Central Asia is already much cooled, pressure has risen there, but in Africa and western Asia there is still a region of low pressure, somewhat to the south of where it was in summer. This causes a more rapid movement of air southward and southwestward, even near the Black Sea, and a greater prevalence of N. E. winds than at other seasons, as shown by the maps, Plates 7 and 9. Pressure is very high in autumn on the northern shore of the Black Sea, and from thence the N. E. winds begin. This is the season when conditions very like to those of the trade-wind region occur here. And it is also a very dry season, the precipitation diminishing very much from June to October. (See Plate 14.)

The cause of the smaller prevalence of the N. W. winds in spring may be found in the low pressure which then prevails in the Mediterranean, while it rises in the Arctic regions. In April especially there is less difference in pressure in the northern hemisphere than in any other month. Thus the winds have a less decided character, and local peculiarities are of comparatively greater influence.

The steppes of south Russia have prevailing easterly winds during about nine months in the year. Only in summer westerly winds take the lead. This region is very different from the rest of Europe in this respect, as well as from the greatest part of the temperate zone of America, where westerly winds are the most frequent.

It was Wesselowski[2] who brought this fact before the scientific world, and proved it so abundantly that no doubt could be entertained as to its correctness. The winds are easterly in this region in winter, spring and autumn, because pressure is higher to the north and in the interior of the continent. The prevalence of easterly winds ceases in summer (or, more accurately, from the middle of May to the middle of

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[1] See remarks of Dr. Dwight, p 369.

[2] In his work on the Climate of Russia.

August), on account of the barometrical depression in central Asia, to which the air is drawn from western Europe and the Atlantic Ocean. (See Plates 7 and 9.)

I give first the percentages and mean direction of the wind as obtained by Kämtz,[1] being the means of 18 stations situated between the Black Sea and 53° N. L.

Percentages of Winds in the Steppes of Southern Russia.

	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Mean direction.	Ratio of resultant.
January	9.4	13.3	21.1	15.0	8.7	10.0	11.4	11.1	N. 89° E.	.15
February	8.3	11.4	19.3	14.4	12.2	11.4	12.2	10.8	S. 56 E.	.11½
March	8.1	11.6	19.6	15.1	11.5	12.7	11.6	9.8	S. 54 E.	.13½
April	8.4	10.6	20.5	16.4	10.8	9.5	13.5	10.3	S. 72 E.	.12½
May	9.2	10.3	17.5	12.3	12.4	11.4	14.6	12.3	S. 29 E.	.04⅓
June	10.3	9.3	13.3	9.6	10.8	11.7	19.7	15.3	N. 81 W.	.12½
July	10.8	10.1	14.0	10.0	9.5	11.0	19.9	14.7	N. 68 W.	.10½
August	12.4	12.1	19.8	11.5	9.2	9.6	12.7	12.7	N. 54 E.	.10
September	12.0	12.8	19.1	13.7	7.5	9.6	13.3	12.0	N. 59 E.	.11
October	8.9	9.4	19.0	14.2	12.0	11.1	13.9	11.5	S. 43 E.	.07
November	8.3	10.4	18.7	17.2	11.9	12.7	11.5	9.3	S. 46 E.	.15½
December	8.8	10.8	17.6	13.0	11.1	13.2	14.1	11.4	S. 30 E.	.06
Year	...	...	...	...	...	...	...	...	S. 67 E.	.06

The mean direction in June and July is nearly opposite that in December and January, and the prevailing winds are opposite, being W. instead of E. There is no month of the year when the prevailing wind comes from another direction than W. or E.

From November to April the continental influence is seen to prevail, in June and July westerly winds from the Atlantic Ocean, as shown on Plate 5, while August and September have a much larger proportion of northerly winds than the other months, so that the resultant is N. of E. The same is the case in October in the southern part of this region (45°–50° N.) I have already characterized these winds as directed towards Africa and Western Asia, and not towards Central Asia, as in summer.

The small ratio of resultant in all months shows that this is a border region. Especially the stations between 50°–53° N. have this character. The winds are shown in percentages in the next table.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 9. N. 356. Nikolaief	18	17	2	7	18	10	7	**21**	13	**24**	7	10	14	13	5	13
" 10. N. 382. Sevastopol	6	7	**31**	3	4	15	**30**	5	12	**22**	**24**	4	6	12	14	6
" 10. N. 384. Simferopol	1	3	23	20	4	12	**28**	9	17	15	**31**	17	6	6	10	8
" 9. N. 364(*a*). Lougan	11	13	18	6	7	9	**25**	10	6	14	**23**	8	8	12	21	5
" 9. N. 358. Ekaterinoslav	6	5	19	8	10	16	**28**	7	5	10	**20**	16	**21**	13	10	5
" 9. Poltava, Charkov and Woltschansk	6	11	14	9	5	14	**20**	**20**	4	12	**19**	12	7	15	16	15
" 9. N. 363. Taganrog	7	6	23	8	14	11	**24**	9	9	11	**41**	7	11	4	10	7
" 9. N. 366. Astrachan	5	19	10	**23**	6	13	9	15	4	**24**	21	17	3	7	8	16
" 8. N. 235. Samarskaja Ferma	8	17	13	6	8	13	10	**27**	12	13	**15**	11	12	**20**	6	12
" 8. N. 237–239. Orenburg	**20**	16	13	4	7	11	**17**	12	11	**18**	**20**	8	11	18	8	4
Northern Border of the Steppes—																
" 9. N. 356. E. Galicia	14	13	5	9	10	9	**27**	13	16	3	2	13	16	10	**20**	**20**
" 8. N. 231. Southern Central Russia	7	9	10	11	10	17	16	**20**	7	11	12	13	11	**16**	15	14
" 8. N. 233. Pensa	11	10	5	10	6	18	15	**22**	8	4	3	12	13	**27**	11	22
" 8. 325½. Samara	18	20	9	2	5	11	**32**	3	7	15	15	7	16	**27**	11	1

[1] Repertorium f. Meteorologie, v. ii. p. 293.

It is necessary to consider separately the different parts of Southern and Eastern Russia.

In the Crimea there are more easterly winds in summer than elsewhere. It must be remembered that this is a small peninsula, which can receive sea-winds from east and west. The high chain of mountains rising above the southern coast does not permit sea-winds from this direction to reach stations to the northward, as Sevastopol and Simferopol.[1]

The opposition of E. and W. winds is not only observed in the Crimea, but also in all that region of S. Russia between the Dnieper and the Don, and between the Black and Azof seas, and latitude 51° N. This is not the case in the steppes on the lower Volga and further east (Orenburg, Astrachan).

At Astrachan N. E. winds prevail in winter, and S. E. in summer. These last are monsoons from the Caspian Sea.

At Orenburg the prevailing winds are E. and N. E. in winter, and N. and W. in summer. The results of this station are especially valuable, the observations being made during twenty years and carefully discussed.[2] The mean direction in the different months is:—

Jan.	N. 85° E.	.19	May	N. 17° E.	.07½	Sept.	N. 12° W.	.10
Feb.	S. 80° E.	.14½	June	N. 10° W.	.22½	Oct.	S. 71° W.	.14
March	N 84° E.	.24½	July	N. 6° W.	.24	Nov.	S. 24° E.	.03
April	N. 79° E.	.19½	Aug.	N. 29° W.	.19	Dec.	S. 34° E.	.08½

Thus in the first four months the direction is nearly due E., the ratio moderately great in March; May to September have northerly winds, with a ratio in July equal to that of March, and S. S. E. in November and December. October stands by itself, having a mean direction from the W. S. W. The percentage of S. W. winds is 20.5, while it is but 18 in winter and 11 in summer. It seems that Orenburg is at this time to the north of the belt of high barometer then existing on the shores of the Black and Caspian seas. Lugan, Astrachan and other more southerly places have prevailing east winds, with little rain and a small amount of clouds. In the winter months Orenburg is then to the S. of the zone of highest pressure, as the winds are E. and N. E. (See Plates 5, 6 and 7.) The division-line runs between Orenburg and Samara, the last named place having prevailing S. W. winds in autumn and winter. The very northerly winds of summer are probably caused by the position of Orenburg just north of the dry and highly heated Kirghiz steppes. They are not found at other stations of Southern Russia nor in Central Asia, while northerly winds are more common in Western Siberia in the summer.

North of 53° in Russia the direction of the wind is about the same as prevails in Western and Central Europe, S. W. in winter, W. and N. W. in summer, as shown on Plate 9. The stations on the northern border of the steppes indicate this. The annexed table gives the percentages of the winds in Northern Russia:—

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[1] For further details about the winds of the Crimea, see the elaborate memoir of W. Koeppen in the new Repertorium für Meteorol., vol. i.

[2] By A. Ovodof in the Memoirs of the Orenburg Section, Russian Geographical Society, v. i.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 7 N. 222. Gorki[1]	7	9	9	11	9	19	15	**22**	7	12	12	13	10	14	16	14
" 7. N. 101. Dorpat	12	11	9	8	8	16	**18**	**17**	6	7	8	12	11	**22**	**22**	10
" 7. N. 95. Mitau and Riga	**25**	6	7	9	11	10	18	15	12	6	10	19	**22**	11	15	5
" 7. N. 103. St. Petersburg[1]	6	18	10	10	9	18	**25**	4	4	10	10	18	17	**22**	16	4
" 6. Finland, coast stations[1]	**18**	8	13	8	12	13	15	12	11	8	15	16	**21**	12	11	6
" 6. Finland, inland stations[1]	14	8	8	8	**18**	14	16	13	10	7	9	15	**21**	17	11	10
" 6. Aland Islands[1]	**22**	5	2	8	16	21	4	**22**	8	10	3	11	9	**32**	9	17
" 6. N. 61(*a*). Kem, White Sea	12	16	**18**	10	14	11	13	4	12	8	3	7	**21**	**22**	15	12
" 6. N. 63. Archangel,[1] White Sea	**19**	13	14	14	8	9	8	15	6	5	11	18	13	20	21	6
" 7. Gov. Vologda[1]	11	12	10	10	10	**18**	16	14	7	6	6	13	15	**26**	13	13
" 7. N. 107, 111. Moscow and Vladimir[1]	15	8	7	9	11	15	**20**	14	13	6	8	11	17	14	**20**	12
" 7. N. 124. N. E. Russia	4	12	12	14	8	**22**	11	17	4	6	4	11	13	**32**	15	14

At inland stations between 54° and 58° N. (Gorki, Dorpat, Moscow, Vladimir) the direction is very like that which prevails in Germany and further west, that is, a decided prevalence of W. winds, more S. W. in winter, more W. and N. W. in summer. Further north, and aside from the influence of the sea (inner Finland, Government of Vologda, N. E. Russia) the winds are S. W. or S. even in summer. Thus we have the same conditions that prevail in northern Sweden.

At Riga and Mitau there are summer monsoon winds from the N., at the coast stations of Finland they are N. and W., at St. Petersburg W., at Kem on the western shore of the White Sea they are E., while Archangel again has N. winds in summer.

The existence of monsoon winds in so high a latitude is a remarkable fact. Kämtz was the first to show that the winds at Archangel had a monsoon character.[2] The mean direction at this place is:—

Summer, N. 18° E. .16: Winter, S. 25° W. .30.

While at Kem it is:

Summer, N. 87° E. .24: Winter, S. 87° W. .25½.

(See also Plate 9.)

A common trait in nearly all the stations of northern and central Russia is the frequence of S. E. winds in winter. In this the influence of the high pressure in the interior of the continent is seen.

NORTHERN AND CENTRAL ASIA.

The belt of westerly winds extends far into Siberia. Here, as in European Russia, we have a belt of high pressure in winter. North of 53° N. the winds are S. and W. in winter, between 50°–53° N. there is a zone of undecided winds, while S. of 50° N. they are easterly, and N. E. already on the lower Syr-Daria. The further we advance to the S. in this direction the greater is the prevalence of E. and N. E. winds in winter, as well as in spring and autumn. This is well

[1] Calculated by Wesselowski, in his work on the Climate of Russia.

[2] Bulletin Phys. Mat. de l'Acad. de St. Petersburg, vol. v. p. 301.

shown on Plate 7. This is a current of air from the belt of high pressure in S. Siberia towards the Caspian and Black Seas, as well as towards other regions further south, the Persian Gulf for example. Though largely prevailing, these E. and N. E. winds have not the constancy of the trades, as is proved by the rains which fall in central Asia. This may be better called a polar current, as a low temperature is brought by it into southern regions. The summer has prevailing N., N. W., and W. winds in Central Asia, this being the current of air setting towards the heated deserts of these regions with their rarefied air. (See Plate 5.)

North of the division belt from 50° to 53° the air flows towards the Arctic Ocean with its diminished pressure, in spring, autumn and winter. We know now that these winds are still prevailing in the valley of the Jenisei. (See Plates 5 and 6.)

I give below the percentages of the winds in Western Siberia and Central Asia.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 7. Eastern Ural[1]	13	14	7	11	7	14	13	**20**	5	5	1	10	10	24	**27**	17
" 7. N. 130. Kourgan	**17**	11	12	10	12	9	14	13	12	8	9	10	**20**	15	16	9
" 7. N. 131. Tobolsk	14	8	7	15	14	14	10	**21**	4	4	5	**35**	20	11	10	12
" 7. N. 132. Ichim	15	21	8	11	13	17	3	12	7	3	3	5	19	**49**	5	7
" 8. N. 240(*a*). Omsk	15	11	15	15	13	9	12	12	4	13	6	9	10	**24**	17	19
" 8. N. 242. Barnaul	6	**21**	2	16	6	**27**	7	15	8	13	1	5	15	**44**	9	8
" 7. N. 135(*b*). Krasnojar	15	16	3	6	5	22	8	**25**	4	6	2	2	2	**66**	14	5
" 7. N. 135(*a*). Jenisseïsk[2]	8	4	15	8	9	14	17	**26**	1	1	17	**33**	20	16	10	1
" 8. N. 241. Semipalatinsk	7	5	14	8	12	10	**30**	13	1	2	**30**	17	18	11	15	6
" 9. N. 373. Valley of the Syr-Daria	18	15	11	4	4	4	**26**	17	13	**19**	15	15	10	8	10	9
" 10. N. 398(*a*). Taschkent	15	8	7	16	4	13	12	**25**	15	**29**	6	8	7	9	4	22
" 10. N. 397(*a*). Krasnovodsk (E. shore of Caspian)	22	15	16	5	5	9	4	**24**	9	**48**	15	2	0.3	2	4	19

In all stations except the last four, the westerly and southerly current prevails in winter. This is a movement to supply the deficiency existing to the northward, on the Arctic Ocean. Yet it will be seen that the same wind is not the most numerous at all stations. We have S. E., S., S. W., and W. This seems to depend much on local position. Calms are very frequent in the interior parts of the continent, especially in cold winter weather. The winds are generally weak. Thus local influences are very conspicuous.

It seems that the direction of the valley has a great influence, the most frequent wind coming from the upper valley in winter; so, for example in Tobolsk the river coming from the S. E., the prevailing winds are from this direction. At Ichim, Barnaul and Krasnojarsk the rivers come from the S. W., and, as the local influence coincides here with the general conditions, the S. W. winds have an anomalous prevalence.

The only exception is at Omsk, where the rivers come from E. and S. E., and yet the S. W. wind is prevailing. This is probably due to the level position of this city.

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[1] Mean of Catharinenburg Nijnii-Taguilsk and Bogoslowsk.

[2] The percentage for the winter is taken from older observations, published by Krivoschapkin in his work "Jenisseïski Okrug."

A moderate prevalence of S. W. winds extending also to S. E., S., and W seems to be the real state of the case when local influences are eliminated. (See Plate 7.)

Until within a few years we knew next to nothing in regard to the winds in the basin of the Jenisei. Middendorff had expressed the opinion that the S. W. winds of Europe extended to the lower Jenisei, but there were not facts enough to sustain his opinion. The observations at Krasnojarsk showed that this was the case on the middle part of the river, while Jenisseisk, situated more to the N., has prevailing S. E. winds. This is caused by a change in the direction of the Jenissei from the mouth of the Angara; it flows from S. E., and, as at other points, the winds from the upper part of the river are prevailing.

It will be seen that the winds of the summer are very different from those of winter. The flow of air towards the depression of central Asia is the principal feature at this season. In Siberia we have the influence of the Arctic Ocean, which is principally felt. It is especially the Kara Sea with the Obi Bay, extending further southward than other parts of the Polar Sea, which we must consider. It must be remembered that the steppes and deserts of central Asia are not separated by any barrier from the Arctic Ocean, in the meridian of western Siberia, so that the air of the Arctic flows freely towards those countries with their high temperature and low pressure. In comparing the table given here for western Siberia with that for European Russia, it will be seen that N., N. E., and N. W. winds are much more frequent in the same latitudes in Siberia. In this the influence of the Arctic Ocean is to be seen, although westerly winds from the Atlantic Ocean also extend there. Pressure is not steady on the Arctic Ocean, its fluctuations are great even in summer, and when a storm-centre passes over it, the air from the Atlantic Ocean and southern Europe will be drawn in to supply the deficiency, as a S. W., W. or N. W. wind.

In summer central Asia has the same winds as western Siberia, W. and N. W., while in winter the difference is great. This is clearly shown on Plates 5 and 6. Semipalatinsk, being situated in the division of zone 50°–53°, has a system of winds intermediate between western Siberia and central Asia, the E. being the most frequent in winter, but southerly winds also occur.

Further south, on the lower Syr-Daria, at Taschkent and at Krasnovodsk (on the eastern shore of the Caspian) N. E. winds largely prevail in winter. That this is also the case in other parts of central Asia, where no long-continued observations have been made, is the report of nearly all the scientific travellers who have visited this country.[1]

In the prevalence of easterly winds Central Asia resembles the steppes of Southern Russia, but there are two important differences. First, the winds are more northerly; second, they prevail to a much greater extent. In Central Asia the mean direction in winter is between N. and E., while in southern Russia it is between S. and E., Astrachan and Orenburg excepted, but these places are already on the border of central Asia. The reason of this difference of the two regions seems

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[1] I refer, for example, to Khanikof, Basiner, Helmersen, Severtzof.

to be that in central Asia the belt of highest pressure lies clearly north, while it is N. E. from southern Russia, where it is also at a greater distance further and its influence less felt. (See Plate 14.)

It was also Wesselowski who proved the existence of a zone of N. E. winds in Central Asia, though the observations at the time when he published his work (1857) were very few.

Below are the percentages of winds for spring and autumn:—

	Spring.								Autumn.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Eastern Ural	9	10	5	12	10	**20**	18	17	7	7	2	8	8	23	**24**	20
Kourgan	15	9	11	9	15	13	16	11	17	8	10	11	13	11	16	13
Tobolsk	6	5	7	**22**	19	14	9	17	5	3	5	14	17	**24**	17	14
Omsk	6	1	7	17	20	18	**28**	3	9	5	2	8	14	27	**31**	4
Krasnojarsk	...	...	...	...	...	...	...	...	11	10	3	3	4	**43**	19	7
Jenisseïsk	...	...	...	...	...	...	...	...	3	3	13	11	15	10	**32**	12
Valley of the Syr-Daria	17	**24**	17	9	5	6	16	7	13	**28**	15	6	9	7	16	6
Taschkent	16	**29**	4	4	10	14	10	14	7	15	**32**	10	2	4	19	11
Krasnovodsk (E. shore of Caspian)	25	18	2	1	2	5	0	**47**								

The proportion of westerly winds is larger in autumn than in winter, except in Krasnojarsk, where the great frequency of S. W. winds in winter has a local cause. Westerly winds are the most frequent at Jenisseïsk and Tobolsk, which is not the case in winter. The westerly winds in autumn are stronger than in winter, and local conditions not so important.

South of 50° easterly winds prevail largely. Pressure has risen in central Asia in autumn, and the region of high barometer is again found to the northward, yet not so much as in winter, as I have shown in the case of Orenburg. (See Plate 7.)

The Austro-Hungarian polar expedition has given us an insight into the winds of the region between 75°–80° lat. N., between Nova-Zembla and the newly discovered land of Francis Joseph. As the observations have not yet been reduced, I can but mention some remarks about the winds made by Capt. Weyprecht.[1] In the first winter, when they were drifted from near Cape Nassau to about $78\frac{1}{2}°$ L. N. and 73° Long. E., they had S. E. and S. W. winds, in the spring the number of N. E. increased. At this time they had drifted to the westward. In the second winter (October, 1873, to May, 1874), they were about $79\frac{3}{4}°$ L. N., and 59° Long. E., not far from Francis Joseph Land, and had largely prevailing E. N. E. winds (more than 50 per cent. of all winds).

It seems that in the polar sea, north of western Siberia, as well as in that north of Europe (Bear Island and Spitzbergen), the polar winds are far from prevailing to such an extent as in the same latitude on the North American continent and the islands north of it.

The observations in northern Nova-Zembla[2] show also a considerable number of

[1] Petermann's Mittheilungen, year 1875, No. 2.

[2] By Capt. Tobiesen, calculated by Prof. H. Mohn, see Petermann's Mitth. 1874, No. 5.

southerly winds in winter. The following are the percentages in winter on the northern coast of Nova-Zembla.

	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
75° 55′ N., 59° 0′ E.	21	17	**20**	11	14	**21**	11	4

Here it seems that the winds blow from the land towards the partially open sea, with its low pressure and high temperature. By winds from the land I mean here local winds from the island itself, as also those from the cold Siberian continent.

We have seen before that prevailing westerly winds extend to the Jenisei. Farther north and east we have but very few observations. It seems that we have here the region of polar calms in winter. The number of calms increases towards the interior and N. E. of Siberia, till at last there can be said to be no prevailing wind. This is the region of highest pressure in winter, as shown on Plate 14, and of also the greatest cold. Here, unlike the American polar regions, the cold of winter is very permanent, and also high pressure. The cold is not brought by winds, but is generated on the spot by radiation.

I give below the percentages of winds as observed at some few stations.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Korennoje Filipovskoje	6	20	**27**	4	2	10	22	8								
Ustjansk	22	14	**40**	6	0	6	6	5	1	0	11	13	**36**	9	22	6
Nijnikolymsk	...	...	...	...	...	...	...	...	6	2	5	**29**	13	7	**25**	12
Yacoutsk	18	7	**20**	8	**20**	4	17	8	**59**	6	3	2	13	2	8	7
Mines of Nertchinsk	6	**15**	11	10	7	12	13	**25**	8	7	5	0.5	0.7	10	23	**48**
	Spring.								Autumn.							
Korennoje Filipovskoje	...	...	...	...	...	...	...	...	7	10	21	8	9	14	**26**	4
Yacoutsk	**31**	6	7	4	19	3	17	11	**39**	5	9	4	14	4	16	9
Mines of Nertchinsk	5	14	9	3	2	11	18	**36**	5	8	6	4	4	10	17	**46**

In the first three places, situated in the vicinity of the Arctic Ocean, there is a decided prevalence of monsoon winds—from the land in winter, from the sea in summer. The mean direction at Nijnikolymsk[1] is in—

Summer, N. 58° E. .48: Winter, S. 16° W. .48: Year, S. 11° E. .25.

The direction of the winds in autumn and spring is probably nearest to that of winter, as may be expected from so high a latitude, where the land is colder than the sea a great part of the year. Thus the mean yearly direction is nearly S. The direction of winds on the northern coast of Siberia is about the same as on the shores of the White Sea (Archangel and Kem).

It is difficult to determine the reason of the frequent N. winds at Yacoutsk, if the air flows towards the Pacific Ocean and is deflected from its true course by the direction of the valley. At any rate, calms are the prevailing feature in win-

[1] The detailed calculations on the winds at this place were published by Spassky in his "Sibirski Vjestnik," year 1823. I have used here only the figures given by Wesselowski, p. 231, as I could not obtain the original.

ter. In the summer, winds from N., E., S., and W. are about equally frequent. It seems that in September and October, when westerly winds are so prevailing in Western Siberia, warm and moist currents of air from the Atlantic can extend to Yacoutsk. At least westerly winds reach the maximum of their frequency in October (20 per cent.). In this month the flow of air towards Central Asia has ceased, while pressure has not risen high enough at Yacoutsk to prevent westerly winds from the Atlantic. October is also the cloudiest month of the year, the amount of clouds being 6.9, while March has only 2.6. The number of rainy days then is also the greatest in the year.

At the mines of Nertschinsk calms are more prevalent than at any other station we know of. In the winter months 65 to 70 observations out of 100 show no movements of the air, and the recorded winds are generally weak. In spring and summer there are less calms and more strong winds. The basin of the Upper Amoor is thus shown to belong yet to the region of Siberian calms (in winter).

While this is the case in the lowlands and valleys, it seems that the conditions are different in higher regions of the atmosphere. At Mount Alibert, 200 miles west of Irkutsk, and over 7000 feet high, a very constant and strong W. N. W. wind is observed. This place was inhabited some years on account of rich mines of graphite, and it was necessary to erect a wall to protect the inmates from the violence of this wind. The mean temperature was found to be much higher in winter than in the same latitude in lower levels. This wind is probably the upper current flowing towards the Siberian pole of highest pressure. It has been supposed that such upper currents flowed towards all regions of high pressure, but this has been proved only for the polar limits of the trades.

MONSOON REGION OF EASTERN ASIA.

Southeastward from the coldest space of Siberia, towards the Pacific Ocean, we have the region of Asiatic monsoons. I have already explained the cause of the movement of air in this region, and it is only necessary to show how far it extends and how small our knowledge of the northern part of the monsoon region was until the last year. The percentages of the winds in winter and summer are given in the annexed table:—

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 8. N. 246. Nikolaievsk, on the Amoor	5	11	**44**	15	1	2	11	11	9	4	2	0	0	4	**54**	27
" 10. N. 400(*a*). Possiet Bay	0.4	14	8	**43**	5	19	2	8	1	6	**1**	8	1	6	4	**73**
" 10. N. 400(*b*). Olga Bay	...	...	...	...	...	...	...	...	9	0.1	2	0.6	3	9	**53**	23
N. 401. Hakodade, N. Japan	2	0	11	**39**	11	15	15	6	7	1	**5**	6	2	1	33	**45**
Zone 11. Yokohama } Japan	5	21	0	3	4	**62**	0	4	**73**	4	**0**	0	8	4	9	2
" 12. N. 192. Nangasaki } Japan	15	0.5	5	9	**42**	15	6	7	**51**	11	**3**	.3	3	4	5	21
" 10. New Chwang, Mantchooria	8	15	6	**23**	**22**	18	8	1	**28**	24	**5**	14	9	8	2	9
China—																
Zone 11. N. 227. Pekin	12	12	7	15	**29**	15	2	9	13	8	2	5	11	14	4	**42**
" 11. N. 228. Chefoo	8	5	17	**22**	**22**	8	8	10	25	3	**1**	3	13	3	13	**39**
" 12. N. 189. Shanghai	6	10	11	**33**	26	7	2	6	**26**	16	**9**	9	4	4	6	**26**
" 13. Pacific Ocean, 135°–145° E.	6	9	**23**	12	14	**21**	10	4	17	14	13	1	8	4	16	**27**
" 14. N. 42(*a*). Victoria Peak, Hong Kong.	0	0	11	13	**41**	31	2	2	13	19	**60**	5	0	0	1	2
" 14. N. 44(*a*). Pacific Ocean, 120°–130° E.	1	15	17	13	19	**26**	8	2	15	**57**	17	7	1	1	0	**1**

The mass of air which is drawn towards the Asiatic continent in summer is so great that the ordinary conditions prevailing over extensive areas of the oceans must be disturbed, as shown on Plates 5 and 14. As there is also a great mass of air drawn towards India and Indo-China, we must here consider Eastern and Southern Asia together.

The summer monsoon of Asia is a deflection of air already in motion, that is of part of the S. E. trade of the Indian Ocean and part of the N. E. trade of the Pacific Ocean. It is easy to prove this for the Indian Ocean, as the observations there are numerous and well discussed. This is not the case for the Pacific Ocean. Yet seeing a region of high pressure about 30° N. to the E. of China, it is impossible to conceive how the air from above it should not be drawn towards the heated Asiatic continent with its low pressure. Probably at the beginning of the summer monsoon, only the air over the nearest parts of the ocean is drawn towards Asia, and the circle extends as long as the pressure continues to sink over the continent.

The direction of the winds in summer on the coast of E. Siberia, as well as in China and Japan, shows that they cannot have come from the southern hemisphere, as they otherwise would have a direction from the S. W. as in India, and not E., S. E., or S. It seems that the air from the Pacific supplies the northern part of this region, from about 25° to 60° N. In Southern China the prevailing winds are already S. W., so that this is probably air from the southern hemisphere. (See Plates 5 and 6.)

As in summer the Asiatic continent attracts the winds, so, on the contrary, in winter a continuous stream of cold dry air pours out from it towards the surrounding seas. It takes mostly two directions: towards the depression in the northern part of the Pacific as S. W., W., and N. W. winds, and towards the equatorial region as a N. E. On the coast of E. Siberia, in northern China and northern Japan the winds are mostly N. W., in southern Japan and middle China they are N., and near the tropics they have a direction from the N. E.

The climate of the whole monsoon region is characterized by a great regularity. This is not only the case in the tropics, but also in the temperate zone. The periodicity of the change of monsoons is the leading feature, taking place at more or less fixed periods, with slight changes from year to year. The N. monsoon of winter is the dry time of the year, the summer or S. monsoon the time of clouds and rain. So, for example, at Pekin the amount of clouds is 2.5 in January and 6.3 in July, at Ochotsk, Ajan and Nikolaievsk (Amoor) 2.5 in January and 5.0 in August (an entirely clear sky = 0, an entirely overcast = 10). At Pekin the quantity of rain in July is more than fifty times greater than in January.

As this distribution of rain and clouds is caused by the monsoon, which brings the dry, cold air of the continent in winter, and the vapor-laden air of the sea in summer, thus causing the above-mentioned periodicity, we have means of judging of the character of the climates of this region even without having observations of winds. For a great extent of country, in China and Mantchooria as well as in eastern Siberia, we have no long-continued observations, yet the general character of the climate is known. Thus we must include in the monsoon zone, besides the tropical countries of India and Indo-China, all of China and Japan, Corea,

Mantchooria, the Amoor provinces and the western coast of the sea of Ochotsk, till about 60° N. L. (See Plates 5, 6, 7.)

As this last extension of the monsoon zone is not generally accepted, it is necessary to give some further details. I have already stated that on the last-named coast the cloudiness is double in summer of that of winter. The E. winds of summer and the W. winds which set in September or October lasting all winter are so well known to the inhabitants that they sail in July and August from Kamtschatka to Ajan or Ochotsk and return in September or October, having in each passage favorable winds. The rains have also a marked monsoon character at Ajan, only they are somewhat delayed, the largest amount falling in August and September. This is due to the great masses of ice in the sea of Ochotsk, which disappear only in the end of summer. So long as the sea is colder than the land, precipitation can not be copious, which is the case until August and September when the sea is warmer than the land.

As to the upper Amoor, the small amount of snow falling in winter and the abundant rains of summer also tend to show that this region is under the influence of the monsoons.

I give below the percentage of the prevailing winds of the different months at Hakodade (42° N. L.) and Nikolaievsk (53° N. L.) to show with how much regularity the change takes place in these northern latitudes, which were till now considered as not belonging to the monsoon regions.

	Nikolaievsk.		Hakodade.	
	E., S. E.	W., N. W.	E., S. E., S.	W., N. W.
January	1	83	10	80
February	5	79	13	72
March	17	52	33	50
April	39	47	43	39
May	50	29	55	25
June	62	14	64	20
July	60	24	64	16
August	45	36	54	25
September	28	47	40	45
October	15	60	29	55
November	7	77	21	63
December	7	72	15	72

India and adjacent regions have been long known to the Europeans as the classical country of the monsoons, though as we have seen their course is not less regular in China and Japan. There is a reason why the mind is more impressed with their regularity in the Indian Seas; owing to the low latitude, there is scarcely any difference of temperature between winter and summer. The change of the season from wet to dry and vice versa is then the only conspicuous feature in the course of the year. In China and Japan the difference of temperature is greater between the two seasons, and these changes more attract the attention. The inhabitant of a temperate zone finds here the habitual difference between winter and summer, and thus considers this climate as resembling his own, different as it may be in the course of the winds and the period of rains. The atmospheric pressure of the monsoon region is illustrated on Plate 14, the winds on Plates 5, 6 and 7.

SUNDA AND PHILIPPINE ISLANDS.

In the seas south of Indo-China there is a double system of monsoons. The S. E. trade crosses the equator in our summer, and gradually is changed to a S. and S. W. wind, while during our winter the N. E. trade crosses into the southern hemisphere, by and by assuming a direction from N. W. This last movement is caused by the heating and rarefaction of the air over Australia.

The Sunda Islands, being situated near the equator, are under the influence of both monsoons. The one or the other of them can bring rain, and this depends much more on local causes than on the situation north or south of the equator. The direction of the wind in this Archipelago and the surrounding seas is not only governed by the flow of air towards Asia and Australia (the great monsoons), but also by the heating and rarefaction of the air on the islands themselves, especially on the largest, Borneo and Sumatra. Even on the island of Java, narrow as it is, there are great irregularities in the course of the monsoons caused by day and night winds, at least at some seasons.[1]

I give here the mean direction of the winds at Batavia, from the elaborate discussion of the observations made at this place by Dr. Bergsma, director of the Observatory.

	Mean direction.	Ratio of resultant.		Mean direction.	Ratio of resultant.		Mean direction.	Ratio of resultant.
January . . .	N. 87° W.	.64	May	N. 66° E.	.28	September . . .	N. 21° E.	.23
February . . .	N. 83 W.	.61	June	N. 60 E.	.36	October	N. 3 E.	.02
March	N. 27 W.	.14	July	N. 59 E.	.35	November . . .	S. 62 W.	.25
April	N. 85 E.	.11	August	N. 58 E.	.29	December . . .	S. 85 W.	.74

It will be seen that the west monsoon (in our winter) is much more regular than the east monsoon. Besides, in the last season, the mean direction of the wind is to the N. of E., while the S. E. trade should be expected.

This is probably due to sea and land winds, which blow more regularly and strongly, as this is a comparatively dry season.

I give next some percentages from this region, adding the Philippine Islands, where the extreme regularity of both monsoons is remarkable, while the Sunda Islands show more local deflections.

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 16. Santa Anna, Philippine Islands . .	0	0	0	1	9	**84**	4	2	8	**65**	14	7	0	0	0	6
" 18. Celebes Sea	3	6	7	10	**29**	**30**	10	4	**33**	21	6	4	4	6	8	17
" 19. Indian Ocean, 110°–115° E.	5	5	15	**38**	16	10	7	4	22	8	12	5	4	9	13	**26**
" 19. Amboma	2	16	**36**	34	2	3	3	3	16	16	6	7	3	12	18	**21**
" 19. Indian Ocean, 105°–110° E.	2	6	30	**39**	14	4	4	1	22	8	4	4	8	14	15	**25**
" 19. Southwestern Sumatra	3	19	**33**	9	7	12	10	7	4	12	18	4	3	13	**33**	14

[1] An excellent sketch of the winds of Java, by Lieut. Jansen, is published in Maury's "Physical Geography of the Sea."

MONSOON REGION OF SOUTHERN ASIA.

Further west, on the Indian Ocean, and the Bay of Bengal, the following table shows the passage of the S. E. trade into the S. W. monsoon. I have given the result of observations on the eastern part of the ocean between 90° and 100° in percentages.

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Indian Ocean and Bay of Bengal, bet. 90° & 100° E.																
" " " 5 –10 S.	2	8	20	**50**	11	6	2	2	3	4	11	17	10	18	**21**	16
" " " 0 –5 S.	7	8	6	14	17	**20**	14	14	6	4	3	8	11	19	**28**	21
" " " 0 –5 N.	2	1	1	4	18	**50**	18	6	17	**24**	10	4	4	11	13	17
" " " 5 –10 N.	0	2	0.4	4	24	**57**	12	0.8	16	**49**	15	7	3	3	0.7	7
(Port Blair, Andaman Islands) 10 –15 N.	1	0	0	1	7	**84**	4	2	10	**64**	13	7	0	0	0	6
Bay of Bengal 15 –20 N.	1	0	0	0	7	**80**	9	3	**34**	**33**	7	0.6	3	7	4	10

Between 5°–10° S. the S. E. trade prevails yet. From 0–5° S. these S. W. winds are already more frequent, which may be partly caused by the influence of Sumatra, although the S. and S. E. winds are also frequent. Between 0 and 10° N. the prevalence of S. W. is very large, but S. and W. are also well represented. North of 10° N. the S. W. winds prevail nearly to the exclusion of all others. In our winter the N. E. monsoon (or trade) largely prevails between 5° and 15° N. Between 0° and 5° N. the number of N. E. winds has decreased one-half, while N. and N. W. have increased in number, while from 0° to 10° S., west winds are the most numerous.

If we take a more westerly meridian, the result will be more clearly seen, as in the next table, and also on Plates 5 and 6.

	June to August.		December to February.	
	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Indian Ocean and Bay of Bengal 10°–15° S., 80°–85° E.	S. 52° E.	.85	S. 73½°E.	.38
" " " 5 –10 S., 80 –85 E.	S. 63 E.	.62	S. 58 W.	.16
" " " 0 –5 S., 75 –85 E.	S. 22 E.	.38	N. 56 W.	.24
" " " 0 –5 N., 80 –90 E.	S. 51 W.	.75	N. 30 E.	.43
" " " 5 –10 N., 80 –85 E.	S. 58 W.	.84	N. 45 E.	.59
" " " 10 –15 N., 85 –90 E.	S. 48 W.	.89	N. 50 E.	.66
" " " 15 –20 N., 85 –90 E.	S. 44 W.	.79	N. 34 E.	.53

Here we have from June to August the mean direction of the wind passing from S. 63° E. through S. 22° E. to S. 58° W., while farther north the mean direction becomes a little more southerly, probably owing to the influence of the continent. Still more regular is the passage of the N. E. trade into the N. W. monsoon of the southern hemisphere.

In the western part of the Indian Ocean, towards the coast of Africa, we have the following percentages:—

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Indian Ocean, 10°–15° S. 40°–45° E.	0.5	0	10	**44**	**43**	2	0.1	0.3	4	1	5	12	**26**	**27**	21	5
" 5 –10 S. 45 –50 E.	0	0.1	2	**57**	37	4	0.5	0.2	**18**	15	15	9	9	7	8	**19**
" 0 –5 S. 45 –55 E.	0.8	0.3	1	15	22	22	**33**	6	10	**41**	22	20	3	0.6	0.6	3
" 0 –5 N. 40 –50 E.	0	0	0	6	23	**62**	2	9	4	**55**	20	18	3	0	0	0
" 5 –10 N. 40 –60 E.	0.3	0.3	0	0.5	7	**76**	14	1	10	**77**	12	1	0	0	0	0
" 10 –15 N. 50 –60 E.	2	3	2	8	22	**60**	3	0.3	4	**38**	**37**	16	5	0	0	0

Here the S. E. trades prevail S. of 5° S.; between 0° and 5° S. there is a zone of variable winds, where S. E., S., S. W. and W. are most frequent, and north of the equator the S. W. monsoon is well established. From December to February the N. E. trades have an easterly direction between 10° and 15° N. They become more N. E. between 0° and 10° N., and between 5° and 10° S, N. W. winds are already prevailing.

Below the percentage of winds at some stations of India is given:—

	June to August.								December to January.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 14. N. 36. Calcutta	5	5	14	17	**36**	15	6	2	**37**	8	7	3	15	7	12	12
" 13. N. 86. N. Central India	4	9	21	**26**	8	8	13	11	7	7	8	11	6	9	**28**	**24**
" 13. N. 84. Bareilly, Central India	7	7	20	**38**	5	5	7	10	8	7	6	11	4	5	19	**41**
" 13. N. 80. Roorkee	2	7	7	**50**	5	6	8	15	2	5	6	17	3	13	13	**43**
N. W. India—																
Zone 12. N. 185(*a*). Moultan	8	11	3	6	17	**50**	0.7	4	**21**	**24**	3	10	4	15	2	**21**
" 12. N. 188(*b*). Lodianah and Dehra Doon	4	7	**18**	17	7	**19**	15	13	2	8	9	4	11	**24**	**22**	20
Zone 15. N. 35. Bombay, number of obs.	0.7	0.9	1	4	6	33	**47**	7	28	19	10	2	0.4	1	6	**43**
number of miles	0.3	0.4	0.8	4	7	36	**47**	5	25	15	7	1.5	0.3	0.7	6	**44**
" 16. N. 36. Madras	1	1	2	14	14	**33**	23	12	11	**45**	20	13	4	2	0.6	4
N. 34. Dodabetta, 8640ft., Neilgherries	9	3	2	1	0	2	17	**66**	11	20	**29**	**29**	9	1	0	1
" 17. N. 38. Colombo, Ceylon	0	0	0	1	3	**63**	32	1	18	58	4	6	2	4	2	6

There is less regularity in the winds of India, taken as a whole, than in Eastern Asia. Especially this is the case if we expect the summer monsoon to be everywhere S. W., and that of winter everywhere N. E. without regard to the position of the station towards the region of lowest pressure, and towards the ocean.[1]

At Calcutta the monsoons must be N. and S., as the region of lowest pressure lies to the N. W. of this place, somewhere in the Punjab, as seen on Plate 14. In the N. W. provinces of India the winds of summer are rather S. E., while N. W. and W. winds prevail in winter. The latter is a current of air from the interior of the peninsula towards the sea, and has much in common with the N. W. winds of Eastern Asia. Farther to the N. W. at Lodianah and Dehra-Doon, we are nearly out of the monsoon region. According to Blanford the winter winds begin on the plains of Northern India, where the pressure is high at that season. They flow towards the seas to the S. W. and S. E.

At Bombay there is a very slight change in the direction of the prevailing wind,

[1] M. Blanford has well discussed the monsoons of Bengal and the adjoining provinces, and their relation to pressure, in "Reports of the Meteorol. Reporter of the Govt. of Bengal."

it being N. N. W. in winter, and W. S. W. in summer. Yet Bombay is known to have very marked monsoon seasons, that is, scarcely any rain falls in winter, while it is profuse from June to September. At Madras the monsoons are from the same direction as on the seas in the same latitude, N. E. in winter, S. W. in summer. The relative position of land and sea has in this case a very small influence, otherwise we should have E. and S. E. winds in summer, W. and N. W. in winter. Madras is nearly due South of the lowest pressure in summer, and the difference is sufficiently great to give the prevalence and regularity of S. W. winds.

The winds at Dodabetta, a high station on the Neilgherries, S. W. of Madras, are peculiar; N. W. winds prevail in summer and S. E. in winter. This shows that the movement of air which is experienced near the sea-level does not extend very high. The mean direction in winter and summer is more than 90° different from that of Madras and other stations of India in low latitudes, and nearly the opposite of that of Calcutta, Central India and the Punjab, as shown by the following table:—

	Spring.		Summer.		Autumn		Winter.	
	Mean direction.	Ratio of resultant	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.	Mean direction.	Ratio of resultant.
Colombo, Ceylon	S. 30° W.	.42	S. 58° W.	.88	S. 63° W.	.43	N. 37° W.	.59
Madras	S. 2 E.	.74	S. 54 W.	.85	N. 51 W.	.24	N. 47 E.	.68
Dodabetta	N 79 E.	.69	N. 47 W.	.81	N. 42 E.	.32	S. 86 E.	.62
Calcutta	S. 1 E.	.55	S. 13 E.	.49½	N. 4 E.	.12½	N. 21 W.	.31½
Bareilly	N. 51 W.	.33	S. 64 E.	.35	N. 11 W.	.12	N. 52 W.	.41
Roorkee	S. 87 W.	.11	S. 42 E.	.29	S. 9 W.	.06	N. 67 W.	.18
Sialkote, near Lahore	N. 86 W.	.22	S. 51 E.	.49	S. 80 W.	.47	N. 85 W.	.34
Bombay	N 58 W.	.62	S. 70 W.	.78	N. 25 W.	.37	N. 5 W.	.64

Thus, on a great part of the continent of India, the motion of air is towards the centre of lowest pressure in the Punjab, as also seen on Plates 5, 6, and 7, while at Dodabetta, 8640 feet high, it is from the Punjab. It seems thus, that the rarefaction of air does not extend to very high regions. In the winter, on the contrary, air moves from N. W. India towards the Bay of Bengal, and in the opposite direction at Dodabetta.

Blanford considers the winds at this high station as somewhat similar to the return-trade or westerly winds blowing over the trades on tropical seas.

At Roorkee the mean pressure in January is 29.15, in June 28.62, difference 0.53 inche, at Dodabetta it is 22.18 in January, 22.09 in June, difference 0.09 in.

It is also seen that the summer monsoon is shorter in the northern part of India, spring and autumn having the same direction of the wind as winter, only the ratio of resultant is smaller. At Calcutta and Madras the S. winds are already established early in spring, while at Colombo, Ceylon, still farther south, spring, summer, and autumn have the same direction of wind. (See Plate 7.)

The dominating winds seem also to be the strongest. So, for example, at Bombay, the greatest mean velocities were distributed as follows: in May S. S. E. 16.5 miles an hour, June S. S. E. 27.5 miles, July W. S. W. 21.4, August S. W. 17.0, December N. N. W. 13.9, January N. N. W. 14.1, and in February N. W. 14.6.

South of the tropic in India the pressure is so much lower on the land than on the sea, that the yearly direction is S. or S. W., with a ratio of resultant, increasing towards the south.

Calcutta S. 2° E. .16½. Madras S. 30° W. .18. Colombo S. 61° W. .29.

Farther to the west, at Bombay, the mean yearly direction is N. 45½° W. .42, thus showing a flow of air from the west, or a much higher pressure on the part of the Indian Ocean between India and North Africa, as also seen on Plates 3 and 14.

As will be shown hereafter, the prevailing winds are also W. and N. W., in Syria and Mesopotamia, especially in summer, but to a less degree in the mean of the year.

WESTERN ASIA.

In Western Asia, that is, in the part of the continent west of India and south of the Caucasus and Black Sea, numerous observations of the winds have not been made. Yet they are needed much more than, for example, in India and eastern Asia, because the latter countries have such a marked climatic type that a very few stations are enough to give us an idea of the whole. Not so western Asia, where there is no regularity and uniformity of climate, and where many local causes have influence on the wind at the few stations established there. The following table gives the PERCENTAGES of winds in this region:—

PERCENTAGES.

	Summer.								Winter.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 13. N. 214. Mosul	25	16	3	2	4	11	12	**26**	12	10	**20**	18	11	3	8	**18**
" 12. N. 183. Bagdad	0	0	0	0	21	27	**52**	0	**31**	0	7	18	3	0	**25**	16
" 12. N. 180. Beirut	8	0.8	0	0	2	27	**34**	27	14	2	0.1	2	12	**29**	**29**	10
" 12. N. 179. Jerusalem	10	3	2	2	2	4	18	**60**	6	15	16	4	5	**22**	17	16
" 13. N. 212. Aleppo	3	0	0.5	0	0	18	**43**	35	11	19	**20**	7	4	15	9	15
" 11. N. 221. Isl. of Ashur-Ade, near Astrabad, S. E. Caspian	11	1	3	1	3	14	**47**	20	14	18	**22**	12	4	9	14	6
" 11. N. 219. Lenkoran	2	15	9	**31**	15	18	5	5	12	18	2	5	4	20	17	**23**
" 11. N. 217. Aralikh	7	7	22	10	3	3	**33**	14	2	9	19	**23**	5	7	19	15
" 10. N. 392. Tiflis	14	3	8	18	10	3	6	**38**	17	4	9	9	5	2	11	**41**
" 10. N. 387(a) & 388. Redout-Kaleh & Poti	0.2	4	13	8	3	**32**	18	22	0.2	3	**59**	15	1	7	7	8
" 10. N. 386. Trebizonde	1.6	1.5	**46**	1.1	1.6	0.5	6	43	3	0	**33**	0	14	5	7	**39**
" 11. N. 213. Erzeroom	4	7	**47**	6	0	3	22	11	14	21	**27**	8	3	3	19	6
" 10. N. 379. Constantinople	0	**76**	0.5	0.5	0	22	0.5	0.3	3	**55**	2	0.3	0.8	37	1.7	0

The first five places have extremely prevailing west and northwest winds in summer—a flow of air towards the depression in Central Asia. At Beirut, Jerusalem and Aleppo, they may be said to be sea-winds, but this is certainly not the case at Mosul and Bagdad, as the Persian Gulf lies to the S. E. of them. Here the winds in the summer are directed from the land to the sea, as also during the same time at Madras. This movement is thus shown not to be local, caused by the difference of temperature between land and sea, but it is part of the general movement towards the depression in Central Asia and India. The meteorological effects of these winds in Syria and Mesopotamia are very different from those of the S. W.

monsoon in India—they bring dry and clear weather. This is easily explained by their origin and direction: in Mesopotamia they come over the land, in Syria from a colder part of the sea.

In all these stations there is a greater number of N., N. E., and E. winds in winter than in summer, Jerusalem alone excepted. In this the influence of the high pressure of the more northerly parts of Asia is clearly seen, and is also shown by Plate 14. Yet it seems that the higher pressure prevailing over northern Africa in that season, and generally about 30° N., has also an influence on the winds: the S. W. in Jerusalem and Beirut, and the W. at Bagdad have probably this origin. Generally the winds are not as constant in winter as they are in summer.

On the Caspian local monsoons prevail. Ashur-Ade, an island in the S. E. corner of the sea, has E. winds in winter and W. in summer. Lenkoran, on the western shore, has prevailing S. E. in summer and N. W. in winter.

At Aralikh at the foot of the Ararat, the prevailing winds are S. E. in winter, that is, from the interior of the continent, and W. in summer.

On the eastern shore of the Black Sea, we see again very strongly marked monsoon winds, from the land (E.) in winter, from the sea (S. W., W.) in summer. The winds here are nearly opposite to those of Lenkoran. It will be noticed that the monsoon character is more marked on the eastern shore of the Black Sea; the reason is, that here the local monsoons correspond to the general movement of the air over this part of Asia, while at Lenkoran they are nearly opposite to it. (See Plates 5 and 6.) The winds of Tiflis are too much influenced by the locality to show the general flow of air over the region.

Trebizonde has prevailing E. and N. W. winds in winter and summer. The country around is very mountainous, and nearly all winds come from one of these two directions. It is very difficult to reach a conclusion on the character of the winds when they are so much influenced by locality.[1]

It seems that the winds at Erzeroom are also much influenced by locality, as it is situated in a rugged mountainous country. It may be that at this elevation, above 6000 feet, the winds are not the same as in the lowlands. E. and N. E. are prevailing here the whole year. I must remark that at all continental stations of western Asia, north, east, and south of Erzeroom the winds are either W. or N. W. in summer (Tiflis, Aralikh, Ooroomiah, Mt. Seir, Bagdad, Mosul, Aleppo). (See Plate 5.) This is with the exception of Alexandropol, which is also a high station (4800 feet) on the plateau of Armenia. At Constantinople the local position is such as to allow scarcely any other wind than N. E. and S. W.; the N. E. are dominant. But it would be rash to conclude that this is the trade-wind. We have seen that to the N. W. of the Black Sea there is a region of prevailing N. W. winds. The country is so walled in by mountains, especially south of the Black Sea, in Asia Minor, that the air must escape through the narrow aperture of the Bosphorus; thence the N. E. winds at Constantinople.

Some meteorologists think that the "trades" are dominant in Western Asia, reaching as far as Constantinople. This idea is founded on the observations at Erze-

[1] See the remarks of the observer at Erzeroom, Rev. N. Benjamin, in the tables, p. 371.

room, Trebizonde and Constantinople, given by Prof. Coffin in his "Winds of the Northern Hemisphere." I have shown that so far as the summer is concerned, we cannot accept this conclusion. At Constantinople and Trebizonde the winds are too strongly influenced by locality, and Erzeroom is too high to warrant an application to the lower regions. Besides this, at other stations, better situated, the winds are westerly. As to the winter, and especially the autumn, I have no difficulty in admitting prevailing N. and E. winds in Trans-Caucasia and Asia Minor, but these are winds which have not the constancy of the trades. (See Plates 6, 7 and 14.)

I should say that the erroneous opinion in regard to the extension of the trades cannot be imputed to Prof. Coffin. The number of stations was so small when he wrote his book (1853), that he wisely refrained from a conclusion.[1]

NORTH AFRICA.

In Africa north of the equator the winds are as given in percentages in the following table:—

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Eastern Africa—																
Zone 12. Alexandria and Port Said	**34**	5	2	2	3	3	9	**42**	9	9	4	6	10	21	**23**	18
" 12. Cairo and Ismailia	**48**	16	9	1	2	0	1	24	21	16	2	1	5	2	18	**35**
" 13. N. 73(*a*). Suez	**43**	1	0	0	2	4	1	**49**	**33**	3	1	2	6	11	11	**33**
" 13. N. 72. W. Egypt (Oases)	**87**	2	1	0	0	0	9	0	**37**	5	5	2	1	6	**26**	18
" 13. N. 74. Upper Egypt	...	...	...	...	...	...	...	...	**52**	0	4	0	4	8	4	28
" 14. N. 29. N. W. Nubia	...	...	...	...	...	...	...	...	**94**	0	0	0	0	1	1	6
" 16. N. 25. Sennaar, Nubia	0	0	2	4	**71**	14	7	2	**92**	0	0.7	0	4	0	0	3
W. and Central Africa—																
" 12. N. 173. Tripoli	15	**26**	21	20	6	1	2	7								
" 13. N. 71(*a*). Murzonk	...	...	...	...	...	...	...	...	17	6	10	3	5	10	**28**	21
" 11. Northern Algeria[2]	18	20	7	3	5	8	8	**31**	8	11	4	11	4	16	14	**30**
" 16. N. 24(*b*). Goree, Cape Verde	13	12	1	3	6	15	**31**	19	24	**50**	23	1	0	0	0	1
" 16. Kouka, Bornoo	2	3	1	3	11	**55**	22	0	23	**50**	6	0	0	0	0	21
" 17. N. 33(*a*). Christiansborg, Guinea at 7 A. M.	1	0	0	0	0.4	24	19	**54**	6	3	0	0	0	1	0.4	**89**
The same at noon	0	0	0	0.3	0.5	**99**	0.3	0.1	0.4	1.5	1.2	4	1.1	**89**	.2	7.5

To express the general features of the climate of Africa north of the equator, it may be said that N. of 17° N. northerly winds prevail the whole year, especially in the south of this zone, and south of 17° N. the winds are north in the winter and south in the summer. (See Plates 5 and 14.)

The division-line of about 17° is the zone of lowest pressure in summer. From the north air is drawn towards it from the Mediterranean, producing a wind similar to the trade in its constancy and other features. From the S. air is drawn in from the equatorial parts of the Atlantic and Indian oceans, and, coming over a great extent of warm sea, it brings clouds and rain as in the case of the Asiatic monsoon.

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[1] For example, p. 137 of the "Winds of the Northern Hemisphere."

[2] Mean of Algiers, Oran, Mostaganem, Setif, Oum-Theboul.

We have seen already that on the Atlantic the division-line between the N. E. trade and the S. W. monsoon of the African coast runs about 12° N., the trade losing its regularity even at 14° N. in July. On the continent this line runs more north. The country to the north, having the whole year N. winds, is rainless, or nearly so; it is the *Sahara* or *Great Desert;* south is the *Soudan*, the country of Agriculture, where vegetation is more and more luxuriant the more we advance southward. This is caused by the longer continuance of the rain They reach in the middle of the summer to about 17°, but in spring and autumn the division-line is more to the south, and south of this line there are southerly winds and rains.

The African traveller Rohlfs remarks that "in the beginning of July we traversed the Titümna or Great Steppe between 16° and 17° where a luxuriant vegetation is found. I noticed a remarkable change in the direction of the wind, instead of the N. E., E. and S. E. we had before, the S. W. was prevailing now. Later, when we came to the country with tropical rains (Kouka) the S. W. was still prevailing, though the rain-clouds came from the S. E."[1] The woodland (Mimosa trees) began at about 15½° N. on the route he traversed. Very similar are the conditions in Nubia. Irregular tropical rains fall as far north as 19° N., further there is a country of prairies or savannah (openings) and still further south the woodland begins. The observations at Sennaar show very well the character of the climate in S. Nubia: N. winds in winter, S. winds in summer, both largely prevailing. (See Plate 7.) The remarkable frequence of calms when the sun passes the zenith is also to be noticed. So, for example, at Schimmedru, 18° 57′ N., there were 37 per cent. of calms in April, 62 per cent. in May, and 47 per cent. in June. At Kouka, 12° 52′, N. Rohlfs observed 46 per cent. of calms in July, 66 per cent. in August, and 51 per cent. in September. The sun is at its zenith at Schimmedru in May and at Kouka in August.

Gorée exhibits the change of monsoon in Western Africa.

Further S., on the coast of Guinea, the winds are from the same direction the whole year; this is the region of the S. W. winds. The daily period is very well marked the whole year, the winds being N. W. in the night and morning, and S. W. in the middle of the day.

On the shores of the Mediterranean the direction of the wind is not the same as in the desert. Especially in Algeria, where the N. W. is most frequent winter and summer. (See Plates 5, 6, and 7.) At the coast stations of Egypt (Alexandria and Port Said) W. and S. W. prevail in winter, and N. and N. W. in summer. There is a belt of highest pressure in winter, and, besides this, there are winds from the land to the sea in the cold season. Farther south, N. W. and N. winds prevail the whole year, as at Cairo, Ismailia, Suez.

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[1] See Petermann's Mittheilungen, Ergänzungsheft, N. 25.

SOUTH AFRICA.

The winds of South Africa are very little known, except in the British Colonies in the extreme south.

It has been said already that along the west coast of S. Africa there were S. W. winds, that is, from the cold marine current towards the land. On the E. coast of Africa easterly winds prevail, although from December to February they are rather N. E., as the southern hemisphere is much heated then, and the pressure is higher on the north.

The mean direction and amount in percentage are as follows:—

	June to August.		December to February.	
Mozambique Channel, 15°–20° S. . . .	S. 17° E.	.85	N. 31° E.	.28
Indian Ocean, 20°–25° S., 47°–50° E. . .	S. 84° E.	.71	N. 67° E.	.66
Port Louis, Mauritius	S. 61° E.	$.66\frac{1}{2}$	N. 83° E.	.47

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 22. N. 36. Madagascar	4	0	4	21	**52**	18	1	0	11	19	**27**	13	5	6	6	13
Port Louis, Mauritius . .	3	2	**31**	**48**	6	1	3	4	6	16	**36**	21	2	2	6	11
" 24. N. 38. Natal, S. E. Africa . .	10	7	**22**	19	9	9	9	17	5	7	29	**31**	10	6	3	9
" 24. N. 44. Grahamstown, Cape Colony .	1	4	2	4	3	24	18	**43**	3	8	10	**27**	13	**27**	5	6
Graff Reinet, Cape Colony .	**34**	2	2	8	15	7	4	**29**	7	2	1	7	**56**	19	7	4
" 25. N. 41. Cape Town, Cape Colony .	**31**	6	6	**32**	14	1	1	9	3	0.3	0.5	9	**67**	9	4	7

In Natal the general character of the winds is tropical, they are still E., but more regular in the summer season of the southern hemisphere (December to February).

In the Cape Colony the winds are regularly sub-tropical: polar (S.) from December to February, and equatorial (N., N. W.) from June to August. The regular yearly movement of the belt of highest pressure which forms the polar limit of the trades is seen here, in the extreme S. of Africa. In the warm season (December to February) it moves southward further towards the pole, so that the Cape Colony has then S. winds. In the winter (June to August) it recedes northward towards the equator. A reference to the map of isobars (Plate 14) will show that in July (midwinter) the pressure is very high in S. Africa, the isobar of 30.2 inches going from the Atlantic to the Indian Ocean, in latitude about 30°. In January, on the contrary, a pressure of 30 inches is found nowhere on the continent of S. Africa, nor on the Indian Ocean, but is restricted to the region of the cold marine current on the Atlantic.

INDIAN OCEAN.

I have given before some figures relating to the northern part of the Indian Ocean. Unfortunately we are far from knowing the winds of this ocean so well as those of the Atlantic. The limits of the trades especially are more uncertain. The position of the Indian Ocean is such, that only the S. E. trade is developed to its full extent, and in our summer, is attracted towards the heated continent of Asia, and, owing to the rotation of the earth, gradually becomes a S. W. wind. There is no equatorial belt of calms at that season, and a reference to the map of isobars, Plate 14, will show that pressure increases then from the polar limits of the S. E. trade, about 25° S. uninterruptedly to the continent of Asia. This is also the explanation of the S. W. Monsoon, which is only the deflected S. E. trade.

Even in our winter (December to February) the winds in the Indian Ocean are under the influence of continents. In the northern part the winds are N. W., that is the N. E. trade crosses the equator, and is drawn towards the heated continent of Australia. Nearer to Africa, the winds are N. E. at this season, also occasioned by a deflection of the trade-wind towards the tropical and sub-tropical part of Africa. Thus, on the whole, the Indian Ocean is more under the influence of the continents than the Atlantic. The following table gives the direction of the winds:—

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 23. Indian Ocean, 47°– 50° E.	6	32	**38**	15	8	1	0	0.5	22	32	28	10	2	1	1	4
" 24. " " 110°–115° E.	9	4	**21**	16	12	14	12	10	0	0	1	**49**	44	4	1.5	0.5
" 25. " " 75°– 83° E.	11	2	6	6	9	21	**23**	21	10	8	10	13	11	17	14	**18**
" 25. " " 25°– 30° E.	19	9	3	3	8	**30**	17	11	9	**24**	10	9	15	**23**	8	2
" 26. " " 25°– 30° E.	15	8	3	5	9	19	**26**	15	10	10	8	7	13	**22**	21	9
" 26. " " 55°– 60° E.	16	4	3	8	13	19	**25**	14	10	5	3	9	11	19	**25**	18
" 26. " " 115°–120° E.	8	5	1	1	10	26	**28**	21	3	6	12	12	15	19	**24**	8
" 27. " " 115°–120° E.	16	4	0	5	15	**26**	18	17	9	4	2	2	7	20	34	21
" 27. " " 45°– 60° E.	20	10	1	1	10	14	22	**23**	13	6	1	3	12	19	20	**25**
" 28. N. 40. Desolation Island	16	2	0	1	0	16	32	**34**	5	0	2	0	7	21	**40**	15

There seems not to be a great difference between the limits of the N. E. trades in the eastern and western part of the Indian Ocean at all equal to that in the Atlantic. In Zone 25 (30° to 35° S.) we see a certain predominance of S. W. winds, which in the southern hemisphere correspond to the N. W. in the northern. In the North Atlantic Ocean there is a zone of prevailing northerly winds, rather N. W. than N. E. Thus in the Indian Ocean, especially near the coast of Africa (25° to 30° E.) we are already out of the S. E. trade, while S. and S. W. are yet prevailing. (See Plates 5, 6 and 7.)

Between 35° and 40° S. the westerly winds prevail very largely, and further south the number increases. Besides the large percentage of winds from this direction, they are also very strong, and in all respects prevail more extensively than in the corresponding latitudes of the northern hemisphere. It will be seen that the difference of pressure between north and south is here very great, the pressure being very low in the Antarctic regions, and high at the S. limit of the S. E.

trade. This produces the N. W. and west winds, while the great expanse of sea gives them additional strength. The only part of the northern hemisphere where the isobars are at all as close is the northern part of the Atlantic Ocean between 45° and 65° N. (See Plate 14.) Westerly winds prevail there, and are strong, but they cannot acquire full strength, as they have not so broad an expanse of ocean to blow over.

AUSTRALIA AND NEW ZEALAND.

The winds of Australia and New Zealand are largely modified by the influence of the continent. This is indicated by the following table:—

			June to August.								December to February.							
			N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 21.	N. 39.	Somerset, Cape York .	0	0	25	**66**	7	2	0	0	9	4	17	8	1	8	10	**43**
" 22.		Sween's Island .	11	10	18	**34**	20	1	3	3	**35**	16	11	6	4	4	8	17
" 24.	N. 54.	Brisbane, Queensland .	2	13	3	10	23	**28**	15	5	10	**41**	9	14	9	6	5	5
" 25.	N. 71.	Sydney, New South Wales .	6	6	3	5	8	10	**36**	27	3	27	**29**	12	21	7	4	4
" 26.	N. 84.	Port Albert, Victoria .	**22**	9	6	9	12	14	10	17	9	3	11	**23**	19	15	10	10
" 26.	N. 78.	Melbourne, " .	**30**	24	4	4	6	8	13	10	10	10	7	15	**25**	16	10	6
" 26.	N. 77.	S. W. Victoria .	**22**	9	6	9	12	14	10	**17**	9	3	11	**23**	19	15	10	10
" 25.	N. 69.	Adelaide, South Australia .	26	**37**	5	3	5	8	4	11	12	10	5	15	13	**26**	7	11
" 25.	N. 68.	Freemantle, West " .	3	**31**	12	9	8	12	8	17	0	10	17	15	12	**34**	9	4
" 27.	N. 66.	Hobarton, Tasmania .	20	5	3	7	7	10	8	**40**	16	7	6	**29**	8	9	7	19
	N. 68.	Kent's Group, " .	9	11	9	8	4	15	**31**	13	7	14	13	3	2	20	**36**	4
" 26.	N. 90.	Auckland, New Zealand .	4	15	10	13	13	**25**	9	11	11	21	4	6	12	**27**	10	9
" 27.		Hokitika, W. Coast of S. Island, New Zealand .	2	18	20	**24**	3	**25**	3	6	6	**25**	16	4	1	20	3	**23**
" 28.		Southland. E. coast of S. Island, New Zealand .	5	1	17	10	0	2	25	**39**	3	0	9	**29**	1	20	**30**	26

The monsoon character of the winds in Australia is very marked. Somerset, on the N. coast 10° L. S., has still the regular monsoons of the Sunda Islands. From November to February the N. E. monsoon of India and China is drawn towards the southern hemisphere as a N. W. monsoon, and brings with it clouds and rain. In the other months the S. E. trade prevails very strongly, while the N. W. wind is said to be generally weak.

Further, in Queensland we have W. and S. W. from June to August (continental winds) and N. E. and E. from December to February (sea winds). Thus the air is drawn *towards the continent in summer*, when Australia is heated, and in winter, on the contrary, the wind blows from the land towards the sea, as also shown by Plates 5 and 6.

The colonies of Victoria and South Australia being situated on the south coast of the continent, the land and sea winds have not the same direction here as on the eastern coast. They have N. and N. E. winds in the cold season, and S. E., S., and S. W. in the warm. West Australia has decidedly N. E. winds from June to August, and S. W. from December to February.

Tasmania is somewhat under the influence of Australia, but here the winds begin already to assume the normal maritime character, especially on the small islands of Kent's group, near Tasmania.

In New Zealand the influence of the land is far from being as important as in Australia, and westerly winds largely prevailing as on the sea in the same latitudes (36° to 47° S.). There is a difference between the east and the west coast of the south island, separated as they are by the high and steep chain of the New Zealand Alps.

PACIFIC OCEAN.

As in the case of the Indian Ocean, the materials for the study of the winds of the Pacific are the percentage of the winds, as collected by Prof. Coffin, selections from which are given in the following table:—

		June to August.								December to February.							
		N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 10.	N. 403 and 404. Pacific Ocean, 120°–150° E.	3	20	19	11	19	12	12	4	23	2	12	0	7	12	16	28
" 14.	Pacific Ocean, 125°–140° W.	46	49	2	0.4	0.8	0	0	3	12	51	23	3	2	3	3	2
" 14.	" 120 –130 E.	0	15	17	13	18	27	8	2	15	57	17	8	1	1	0	1
" 14.	N. 2. Sandwich Islands	0.3	47	34	9	9	0.4	0.2	0.2	12	26	4	4	5	22	9	17
" 15.	China Sea, 106°–115° E.[1]	3	3	6	17	37	27	7	2	19	55	15	8	1	0	0	1
" 15.	Pacific Ocean, 135°–150° W.	8	63	22	4	0.7	0.8	0.8	1								
" 16.	" 105 –115 W.	19	8	5	5	7	22	17	17	9	54	28	4	3	1	0	0.5
" 17.	" 90 –100 W.	8	0.6	0	4	45	38	8	0	5	52	19	8	13	3	0	0
" 17.	" 120 –130 E.	4	8	6	9	29	24	7	13	8	62	22	5	0.5	0	0	3
" 18.	" 155 –165 W.	0	14	43	35	9	0	0	0	2	16	41	37	5	0	0	0
" 19.	" 175 –180 W.	5	24	42	22	4	0	3	0	25	24	13	16	3	2	6	12
" 19.	" 145 –160 W.	3	25	21	33	3	7	0	9	16	68	3	4	3	0	3	3
" 19.	" 120 –125 W.	0	4	46	44	6	0	0	0	0	0.3	26	59	15	0	0	0
" 20.	" 100 –105 W.	0	0	16	70	11	2	0.4	0	0	1	11	84	4	0	0	0
" 21.	" 150 –155 W.	0	47	32	20	0	0	0	0	11	51	30	3	0	0	1	3
" 21.	" 175 –180 E.	1	2	45	43	5	0	4	0	5	22	20	20	11	8	6	8
" 21.	" 105 –110 E.	4	7	47	30	8	2	0.3	0.3	4	1	5	12	26	27	21	5
" 22.	" 150 –155 W.	6	8	30	39	4	3	8	3	10	35	29	12	1	0.5	6	6
" 22.	N. 7. Society Islands	2	13	27	14	12	17	8	8	7	24	31	2	0	1	14	21
" 22.	Pacific Ocean, 85°–125° W.	1	5	24	43	14	1	3	3	3	5	34	50	6	0	0	1
" 23.	" 120 –150 W.	16	28	11	9	7	3	8	19	10	22	38	17	3	1	3	5
" 23.	N. 55. Port of France, New Caledonia	1	0	18	54	3	4	12	8	0	0.2	5	79	13	2	1	0
" 24.	Pacific Ocean, 165°–180° E.	8	14	17	13	13	14	16	4	4	11	40	18	6	6	9	4
" 24.	" 175 –180 W.	5	13	24	16	8	19	11	4	5	8	29	35	10	8	4	2
" 25.	" 85 –90 W.	13	13	8	14	5	15	12	20	2	5	16	30	12	11	15	10
" 25.	" 120 –150 W.	[illegible]	34	1	3	1	15	21	3	22	12	11	14	9	11	10	11
" 25.	" 175 –180 E.	6	14	23	15	6	25	3	7	4	12	33	19	11	7	12	3
" 26.	" 160 –180 E.	17	12	4	14	8	16	11	18	16	14	11	8	13	14	10	14
" 26.	" 120 –165 W.	25	8	7	13	7	13	10	16	11	10	16	13	7	13	17	12
" 26.	" 120 –125 E.	16	3	2	0	11	11	28	30	12	9	13	8	13	20	18	8
" 27.	" 140 –150 E.	11	7	4	7	16	16	19	19	11	8	8	5	8	13	27	19
" 28.	" 100 –120 W.	13	7	0	12	14	12	34	6	7	5	5	3	5	23	35	15
" 28.	" 85 –90 W.	11	5	4	7	22	22	15	14	10	2	2	1	6	19	36	23

What distinguishes the Pacific Ocean from the Atlantic is a less regular S. E. trade, which seems to be caused by the numerous islands of Polynesia. Many of them are high, volcanic, so as to intercept the wind for a certain distance. Another influence exerted by these islands is the local rains, which are produced by them, partly by condensation of the vapor brought by the trade; partly due to local calms and the ascending current. These condensations of vapor cause a lower pressure, and the movement of the surrounding air to supply the deficiency causes irregular winds.

[1] For the whole year.

Especially in the central and western part of the ocean (between 10°–20° S.), are these irregularities noted. It will be seen that in these parallels the S. E. trade is very regular in the Atlantic Ocean. (Plates 5 and 6.)

The inner boundaries of the S. E. and N. E. trade are given as follows by Kerhallet in his "Considerations Générales sur l'Ocean Pacifique."[1]

Months.	N. E. Trade.	S. E. Trade	Months.	N. E. Trade.	S. E. Trade.
January . . .	6° 30′ N.	5° N.	July	12° 5′ N.	5° 4′ N.
February . . .	4° 11′ N.	2° N.	August . . .	15° N.	2° 30′ N.
March	8° 15′ N.	5° 50′ N.	September . .	13° 56′ N.	8° 11′ N.
April	4° 45′ N.	2° N.	October . . .	12° 20′ N.	3° 32′ N.
May	7° 52′ N.	3° 36′ N.	November . .	———	———
June	9° 56′ N.	2° 30′ N.	December . .	5° 12′ N.	1° 56′ N.

These observations show that the belt of equatorial calms is always north of the equator. It seems that the figures given by Kerhallet are taken from observations in the eastern part of the ocean, near the American coast, where really the S. E. trade crosses the equator. The wide limits between the two trades in summer are caused by the prevalence of the S. W. monsoon on the coasts of Central and South America. (See Plates 5, 6 and 7.)

In other parts of the Pacific Ocean the equatorial calms seem to be nearer to the equator, and partly even south of it. According to the statements of numerous navigators the trades are also more easterly there, and often do not leave any calm-belt between them, so that a ship can sail from the one into the other trade without interruption, as was also stated for the western part of the Atlantic Ocean.

The northern limit of the N. E. trade is also in a comparatively low latitude in these parts, as shown, for example, by the observations at the Sandwich Islands. They seem to be already in the zone of variable winds in the winter, N. E. and S. W., the one being noticed about as frequently as the other. Rains are also frequent in this season, with S. W. winds, thus corroborating the testimony of the wind observations.

The system of winds along the western coast of America has been already discussed.

As to the middle latitudes of the southern hemisphere in the Pacific, the same may be said of them as of the same latitudes of the Atlantic, and Indian Oceans.

ANTARCTIC ZONE.

I give next some calculations from the extreme southern part of the Pacific and Antarctic Oceans, comprising the most southerly latitudes to which man has yet penetrated.

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[1] See Pilot Chart of Atlantic, Pacific and Indian Ocean, edited by the British Admiralty. Unfortunately I could not obtain it in Washington, and thus have not the possibility of tracing the limits of the trades and monsoons according to the best source, as in the Atlantic.

	June to August.								December to February.							
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Zone 29. 160°–165° W.	6	9	11	8	10	16	**26**	13	19	10	6	4	6	13	19	**22**
" 29. 80 –85 W.	7	10	10	10	13	**19**	16	15	13	3	1	2	7	18	**29**	26
" 29. N. 51. Heard's Island	28	5	4	0	4	4	**39**	14	24	2	9	1	3	6	**38**	18
" 29. N. 28. 60°–70° W.	11	3	3	17	6	**17**	**25**	17	17	6	3	2	8	**26**	22	15
" 29. N. 13. Off Cape Horn	11	7	5	2	11	**33**	18	13	11	4	2	3	8	20	**31**	21
" 30. 85°-115° W.	8	8	22	0	1	11	**33**	16	13	3	3	8	5	10	**29**	**30**
" 30. 56 –58 S., 75°–79° W.	14	13	12	5	**18**	**18**	9	12	8	4	4	4	3	16	**30**	**33**
" 30. 56 –58 S., 69 –71 W.	6	6	0	0	2	10	29	**47**	8	5	1	1	7	19	**35**	23
" 30. 56 –58 S., 65 –67 W.	8	4	3	6	15	21	**27**	16	10	5	1	1	6	22	**38**	16
" 31. 60 –62 S., 63 –83 W.	...	...	...	...	...	...	...	...	7	0	6	0	0	2	**43**	**43**
" 31. 60 –65 S., 5 –15 W.	...	...	...	...	...	...	...	...	11	12	15	16	**19**	13	8	5
" 31. 60 –65 130 –135 E.	...	...	...	...	...	...	...	...	0	0	**45**	28	13	5	6	3
" 31. 60 –65 160 –176 E.	...	...	...	...	...	...	...	...	4	4	11	11	0	14	**31**	26
" 32. 105 –160 E.	...	...	...	...	...	...	...	...	2	2	18	**22**	**21**	**20**	12	4
" 32. 160 –176 E.	...	...	...	...	...	...	...	...	11	13	16	9	12	**18**	10	10
" 33. By Sir James Ross	...	...	...	...	...	...	...	...	5	9	20	**28**	8	16	9	5
" 34. By Sir James Ross	...	...	...	...	...	...	...	...	6	19	**24**	15	9	12	7	8

The observations in these high southern latitudes are very conclusive; from the zone of the most prevailing westerly winds between 50° and 60°, we pass to a region of southerly and easterly winds further south. The latitudes at which these winds become prevailing are not the same in the whole Antarctic Ocean. South of Cape Horn W. and N. W. winds largely prevail between 60° and 62° S., and further south there are no observations in these meridians. Southeasterly winds are already prevailing in the meridians of the Atlantic Ocean, between 60° and 65° S., and also south of Australia, while again on the meridian of New Zealand 160° to 176° E., westerly winds are the most frequent. This seems to depend much on the currents of the sea. Where warm currents carry a high temperature further south, pressure will be lower there than in the same latitudes generally, and westerly winds will also extend further southward. Between 65° and 70° S. Lat., on the meridian of New Zealand, there is already a slight prevalence of southerly winds.

Between 70° and 78° S. the observations of Sir James Ross show this to be largely the case.

Thus the hypothesis of Prof. Coffin as to the prevalence of polar winds (S. and E.) is shown to hold good also for the southern hemisphere, notwithstanding the small number of observations we possess from high southern latitudes. As to the division-line from the W. and N. W. winds of the temperate regions, it cannot yet be traced with precision.

DESCRIPTION OF MAPS AND DIAGRAMS.

THE direction of the wind on the maps, Plates 1 to 13, is indicated by arrows. For example, to indicate a N. wind, the head of the arrow is turned towards the south, and the tail towards the north. The direction indicated is not that of the prevailing wind, but the *mean direction*, the manner of calculation of which was explained in the beginning of this work. The length of the stem of the arrow, exclusive of its barb, is proportionate to the ratio of resultant, the greatest length being when the ratio is equal to 100, or when all winds come from the same direction. These maps were originally all drawn to a scale, in which one hundred per cent., as found in the tables, was intended to be represented by an arrow an inch in length; but, by the process of engraving adopted, it was found practicable to diminish the size of the maps somewhat, so that 100 per cent. equals two-thirds of an inch; for instance, on Plate 1, Zone 10, serial number 196, representing Eastern Pennsylvania, the arrow is 20 one-hundredths of an inch in length, corresponding to the tabular percentage .30 given on page 320. The more equally the winds are distributed around the horizon the smaller is the ratio, and also the shorter the arrow on the map. Where it is very small it indicates that there is no really prevailing wind. This is generally found on the boundaries of two systems of winds.

PLATE 1.

Annual Direction of Upper and Lower Current in the United States.

The mean direction of the wind, as observed by the wind-vane, is indicated by full arrows, and the direction of the motion of clouds by broken arrows. It will be seen that they very nearly coincide in nearly all regions of the United States. Generally the upper current is more purely west in all the regions east of the Mississippi, while the lower current has a more W. S. W. direction between the Mississippi and Apallachian Chain, as well as in the Southern Atlantic States, while in New England the winds are rather W. N. W. Near the Gulf of Mexico the arrows have a very different direction, but it will be seen that the arrows are very small, thus indicating an undecided prevalence of any wind. In some parts of Texas, also, the upper and lower current seem to come from different directions. In this map, as well as in the others, the figures relate to the serial number in the zone, and, by reference to the Numerical Index to Stations, given on pages 52 to 66, it is easy to find the name of the place indicated by each figure.

PLATE 2.

Mean Annual Direction in the Arctic Regions.

It will be noticed that the mean direction of the wind is from the north in Greenland and Arctic America, and that the arrows are long, thus indicating very prevailing winds. On the northern coasts of Europe and Asia the winds are from the south, while Bear Island, between Norway and Spitzbergen, as well as Iceland, have prevailing easterly (polar) winds. In this map a dotted line is traced, and called "Southern limit of polar system." This is the same boundary as that traced by

the late Prof. Coffin on the maps of the "Winds of the Northern Hemisphere." In the mind of the deceased author this was the boundary between the prevailing polar winds of the Arctic regions and the equatorial (westerly) winds of the middle latitudes of the Northern Hemisphere. He traced it at a distance of 28° 20′ from an imaginary point which he called the "Meteorological Pole," and located in 84° N. lat. and 105° W. long.

PLATE 3.

Mean Annual Direction between 80° N. Lat. and 56° S. Lat.

The general prevalence of westerly winds will be seen here in the middle latitudes of the Northern Hemisphere. Yet they are not always true equatorial winds, but incline somewhat to the north in some regions. On the tropical seas easterly winds largely prevail, as indicated by the length of the arrows. This is the region of the trade-winds which prevail more largely in the Southern Hemisphere than in the Northern. In the middle latitudes of the Southern Hemisphere westerly winds again prevail, and this to a large extent, while further south there are again easterly (polar) winds. In some parts of the globe, where monsoon winds prevail, the length of the arrow showing the mean annual direction is rather small (as in India, China, Japan). This does not come from an undecided character of the winds, but is caused by the nearly opposite direction of the winds in winter and summer. As they counteract one another in the yearly resultant, the ratio of the latter is small. A reference to Plates 5 and 6, giving the mean direction of the wind in summer and winter, shows that at each season the arrows in China, India, Japan, and the surrounding seas, have a great length, showing largely prevailing winds at both seasons.

Monsoon comes from the Arabic word *Mausim*, or wind of the season. We call monsoon regions those that have winds of nearly opposite character in winter and summer, each of these winds prevailing during some month of the year nearly to the exclusion of all others. On the greatest scale we see such winds along all the southern and eastern coast of Asia, and on the surrounding seas, the winds in the tropical part of this country being N. E. in winter and S. W. in summer, while further north, in the interior of India, China, Japan, and the Russian Amoor provinces, the winds are rather N. and N. W. in winter, and S. and S. E. in summer. Monsoon winds are caused by the mutual reaction of great continental masses and the ocean, and thus they are most prevailing where the greatest continent—Asia—approaches the greatest oceans—the Pacific and Indian. In winter the pressure of the air is high on great continents, and thus air flows out from there, while in summer, on the contrary, the land-masses being highly heated, an ascending current is produced and the air from the surrounding oceans is drawn in to supply the deficiency. In all parts of the earth, where continents and oceans adjoin, we see a tendency to produce monsoons. This is what Prof. Coffin has called *monsoon influences*, but not everywhere monsoon winds are dominant. Monsoon influences may be considered as small deflections from the mean annual direction in regions where no great differences in the mean direction of the wind in the different seasons are experienced, and thus this relative influence of land and sea is small. In monsoon regions, on the contrary, this influence is experienced on the largest scale.

PLATE 4.

Mean Direction in the Four Seasons in the Antarctic Region.

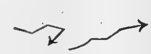
The direction of the wind is here represented by broken arrows, thus:  A straight line drawn from the tail to the head of the arrow gives the mean annual direction. The sequence is always—spring, summer, autumn, winter. Thus the nearest part to the tail of the arrow indicates the mean direction and ratio of resultant in the spring, and the nearest to the head that of winter. As before stated, June, July and August are denominated "summer," etc.

PLATE 5.

Mean Direction in the Summer (June, July, August) between 80° N. Lat. and 56° S. Lat.

This map shows the mean direction of the wind for the time in which the Northern Hemisphere is highly heated, while the southern has its winter. Very prevailing sea-winds (S. W., S., S. E.) along all the southern and eastern coast of Asia (the summer monsoon) are the principal features of the season. In Australia, especially on the northern coast, land-winds prevail. They are S. E. in the latter region. In other parts of the globe the difference between the direction of the wind in summer and that for the year is smaller. Yet, in the United States, there is a monsoon region north of the Gulf of Mexico, between the Rocky Mountains and the Mississippi. Southerly winds from the gulf are largely prevailing there. In Northern Africa northerly winds prevail to a larger extent than in the mean of the year. In the Atlantic the belt of the N. E. trade-winds has the most northerly position in the year, while north of it there are prevailing N. and N. W. winds to and beyond 40° N. lat. In Western Asia W. and N. W. winds prevail, this being a flow of air towards the barometric depression in N. W. India. In Southern Russia we see westerly winds at this season, the air flowing towards Central Asia.

PLATE 6.

Mean Direction in the Winter (December, January, February) between 80° N. Lat. and 56° S. Lat.

At this season the direction of the wind is nearly opposite to that observed in June, July and August in the monsoon region of Asia. N. E. winds prevail in Southern India and the Indo-Chinese Peninsula, N. and N. W. in the interior of India, and in China, Japan, and the Russian Amoor Provinces. The N. E. monsoon crosses the equator, appearing as a N. W. wind on the heated continent of Australia. In North America, Texas and the States to the north of it have prevailing N. and N. W. winds—a direction nearly opposite to that of summer. The S. W. winds which prevail the whole year in the temperate latitudes of the Northern Atlantic have now reached the maximum of their frequency and strength, blowing also in a great part of Europe. Southern Russia has prevailing east winds in winter. In Western Asia the westerly winds are not so largely prevailing as in summer. The trade-wind belt of the Northern Atlantic and Northern Pacific Oceans has receded to the southward.

PLATE 7.

Direction of the Wind in the Four Seasons between 80° N. Lat. and 56° S. Lat.

The general arrangement of this table is the same as for Plate 4. It will be noticed that generally the direction of the wind in spring is nearer to that of summer, and that of autumn to winter. This is especially the case in monsoon regions. In Northern Europe and the eastern part of the Atlantic Ocean the proportion of northerly winds is greatest in spring, giving, sometimes, a mean direction N. of W., while the other seasons have a mean direction S. W. or W. In other places the larger proportion of north winds has influence only in so far as to lessen the ratio of resultant, which is yet S. of W. In Southern Russia and Asia Minor the autumn has the largest proportion of N. E. winds, especially the months of September and October. Many places there have a mean direction nearly E. N. E. in autumn, while it is somewhat S. of E. in winter and W. N. W. in summer.

PLATE 8.

Mean Direction in the Four Seasons in the United States.

[See Explanation of Plate 4.]

Here, also, the mean direction of the wind in spring is nearer to that of summer, and that of autumn to winter. West of the Apallachian Chain, and north of 42° N. lat., there are more northerly winds in spring than in summer and autumn, while further south, and west of the Mississippi, southerly winds prevail already in spring. In the Southern Atlantic and Gulf States there are more northerly winds in autumn than in other seasons.

PLATE 9.

Mean Direction in the Four Seasons in Europe.

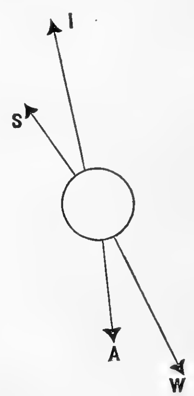
[See Explanations of Plate 4.]

The great extension of northerly winds in the Mediterranean in summer must be noticed. On this Plate are placed a few arrows, whose shafts are divided into twelve portions, corresponding to the successive months, beginning with March (spring), and ending at the barb with February (winter). Here, as in the preceding plate, may be observed the peculiar "S" shape of the curves, so regular a feature in the movement of the wind in the successive seasons, that it was the occasion that led Prof. Coffin to his investigation of the monsoon influences delineated in the following Plate.

PLATE 10.

Monsoon Influences in the Four Seasons between 80° N. Lat. and 56° S. Lat.

On this map there is a graphic representation of the forces which deflect the mean direction of the wind from its annual value at each season. Taking, for illustration, the monsoon influences at Easton, Pennsylvania, the manner of their representation is the following :—



Spring being designated by I, as the first season, summer by S, autumn by A, and winter by W. The opposite directions of the deflecting forces for both sides of the Atlantic Ocean is especially to be noticed. It was first pointed out by Prof. Coffin in a report to the American Association for the Advancement of Science, in 1848, and then embodied in his work on "the Winds of the Northern Hemisphere." The direction of the deflecting forces is from the S. E. on the coast of the United

States, and from N. W. on the Atlantic Coast of Europe in summer. Similar monsoon influences are at work on the coast of the White Sea and Arctic Ocean. In the real monsoon regions the deflecting forces are very powerful.

The mode by which these forces are ascertained is explained in the introduction to this work, and also fully illustrated in Plate 26.

As the opposition of these forces, however varied they may be in their directions and intensities, must ever represent a state of exact mechanical equilibrium, some apparently abnormal cases found on the ocean, and mostly south of the equator, must be accounted for; that they be not attributed to erroneous computation. For instance, Zone 24, serial numbers 10 to 21 *et seq.*, and preceding zones, in reference to which foot-notes have usually been appended to the respective pages of the Tables. They are to be explained by the fact that the observations in those localities were not numerous enough to be taken as the basis of a reliable annual resultant, and, therefore, the monsoon influences were obtained by comparing the separate seasons—not with the meagre yearly resultant that they would have afforded—but with an annual resultant that was obtained by combining all the observations taken on that ocean, and within the limits of the zone.

PLATE 11.

Monsoon Influences in the United States.

[See Explanation of Plate 10.]

The remarkable constancy of the winds between the Apallachian range and the Mississippi, and 34° and 42° N. lat., is especially to be noticed here. Hence the monsoon influences are extremely weak. The most powerful monsoon influences are seen in Texas, the region of the United States which is most like Eastern Asia in the course of its winds.

PLATE 12.

Monsoon Influences in Europe.

In winter a monsoon influence from the S. E. is seen in Europe; it is a reaction of the high pressure in the interior of the continent. In summer, on the contrary, except in a part of the Mediterranean region, the monsoon influences are from the west.

PLATE 13.

Annual Mean Direction of the Winds in the United States, showing that calculated when the Velocity is taken into account in comparison with that for Time only.

The first is expressed by broken arrows, the last by full arrows. It will be seen that the mean direction varies but little, if the velocity is taken into account, from that calculated from the time only. Generally in the first case the ratio of resultant is somewhat greater (the arrows longer). For a more extended view of this topic, compare with this map the diagrams found in Plate 25, and also the introduction to the Velocity Tables, in Series C.

PLATE 14.

Maps of Isobars or Lines of Equal Atmospheric Pressure at Sea-Level for the Year, January and July.

These maps are inserted from the treatise of Buchan, "Mean Pressure and Prevailing Winds of the Globe," published in the *Transactions of the Royal Society of Edinburgh*, vol. xxv., which was the first attempt to do for the pressure of the air what Humboldt and Dove had done for temperature.

A knowledge of the atmospheric pressure is of the greatest importance for the explanation of the courses of the winds. The explanation of these maps is found in the "Discussion and Analysis of Winds," where constant reference is made to it.

PLATES 15 TO 20 INCLUSIVE.

RELATIVE PREVALENCE OF WINDS, IN SUMMER AND WINTER, EXPRESSED IN PERCENTAGE.

PLATE 15. Arctic Regions.
PLATE 16. Europe, south of latitude 60°.
PLATE 17. Asia and Africa, between 25° and 60° north latitude.
PLATE 18. Tropical Regions, north of the equator.
PLATE 19. Tropical Regions, south of the equator.
PLATE 20. South Temperate Regions, between latitude 25° and 60° south.

These six Plates represent the relative prevalence of winds from the different points of the compass in summer and winter, taken as the most marked seasons, and are adapted to the ready comparison and contrast of these seasons. The width of shading of the outer ring, reckoned from the circumference toward the centre, expresses in hundredths of an inch the percentage given in the Tables for the summer; in like manner, the inner belt of shading is used for the winter. The distance of these pairs of limiting circumferences from each other is 30 per cent.; when, therefore, the tabular percentage is in excess of this amount, the irregular contour line that marks the inner limit of the width passes into the next inner space.

Monsoon influences of marked character are vividly depicted in Plate 17 (Hakodade, Nangasaki and Pekin), Plate 18 (Celebes Sea and China Sea), and Plate 19 (Sween Island, Australia), the belts of shading far outstripping their limits, and even overlapping one another in the cases of Port Blair and Colombo, Ceylon. On the contrary, when the bands are symmetrical for the two seasons, these windroses show the absence of any noticeable monsoon influence, as on Plate 16, for Europe, in the cases of Dublin, Greenwich, St. Petersburg, Vladimir, Debreczin and Gorki.

PLATE 21.

PERCENTAGE OF WINDS FOR THE FOUR SEASONS.

This Plate differs from the preceding only in containing windroses for spring and autumn, and illustrates the general similarity of the former to winter and of the latter to summer.

PLATE 22.

RELATIVE PREVALENCE OF WINDS IN THE UNITED STATES, IN SUMMER AND WINTER, EXPRESSED IN PERCENTAGE.

[Illustrated by Vertical Projection.]

This Plate, somewhat more compact in form, exhibits facts of the same nature as those contained in Plates 15 to 20, the percentage of winds at any place being represented in horizontal widths measured across the vertical bands. It enables one readily to find at what place wind from any particular direction is prevalent, by simply tracing down the column until great breadth is reached.

PLATE 23.

BAROMETRICAL WINDROSES.

This Plate was drawn by the author as an early attempt to illustrate the connection between the rise and fall of the barometer and corresponding changes in the direction of the wind. The width

of the shading at the several points of the compass shows the average rise or fall of the barometer per day while the wind is from those points, the + indicating a rise, and the — a fall; the two arrows starting from the centre are directed toward the points of maximum and minimum pressure; and a light line indicates the mean of the two. The arrow that springs from the circumference shows the mean annual direction of the wind. In order to compensate for the rare occurrence of winds from some directions, at several of the places, and make the shading more symmetrical, without affecting the principle of the illustration, the mean rise or fall for each point is combined, in several instances, with the two contiguous ones on either side, and the shading is proportioned to the new means thus found.

PLATE 24.

A Meteorological Chart for Ogdensburg, N. Y., 1838.

This plate is a suggestive presentation of meteorological facts. Drawn by the author, in January, 1839, it is believed to be the earliest American effort to connect and vividly illustrate the mutual relation between the results of a minute record of the winds, made by the aid of a self-registering vane, and so many as five of the points chiefly noted in the registers of meteorological observers, viz., amount of cloudiness, fall of rain and snow, and fluctuations in the barometer and thermometer. Deductions from this chart occupy pp. 220–227 of the Report of the Regents of the University of the State of New York, for the year 1838. Each of the circles gives a synchronous view, the shading corresponding in position with the wind then prevalent, and by its width indicating the amount of the contrasted element. From each month, arrows radiating from the centre denote the point of compass from which the wind came that was accompanied by a maximum or minimum of rainfall, thermometric fluctuation, etc.

PLATE 25.

Velocity Chart.

This illustrates minutely the general results of a series of observations, covering 700 years, and taken at 418 places on the American continent, from 1854 to 1857. The object was to determine what relation the average velocity of the winds, as a whole, and the varying and separate velocity of each particular wind, has to the results, as to direction and prevalence, that are obtained when the variation in velocity is disregarded. The solution of this question was viewed as vital to the correct study of the winds, and therefore of no small importance in the search for the laws of atmospheric circulation.

This plate shows that the resultants computed by assigning to each wind its own separate velocity differ from those in which the variation in velocity is disregarded, in being about 9° more northerly, and having a magnitude of 26 instead of 23 per cent.; and, further, that the velocity of all winds in the United States, north of latitude 33°, is a little more than seven miles per hour, resulting in a transfer of air in the mean direction of the main current at the rate of 2.0 or 1.7 miles per hour, according as velocity is counted or omitted.

The arrows represented as flying with the atmospheric current indicate the direction of the winds when only the time of their continuance is taken into account; the dotted lines show the result when the element of Velocity is also regarded. The height of the ordinates in the middle column is proportioned to the average velocity of the wind at each season of the year. In the right-hand vertical series of diagrams, the ordinates that terminate in a continuous line show the velocity of the wind in the mean direction, on the supposition that the entire current moves with the foregoing average velocity; while, in contrast, those ordinates that end in the broken (dotted) lines exhibit the result, as to velocity in the mean direction, when to each wind is assigned its own special velocity; when the latter class of ordinates is longer than the former, which is usually the case, the intervening space contains the sign +.

PLATE 26.

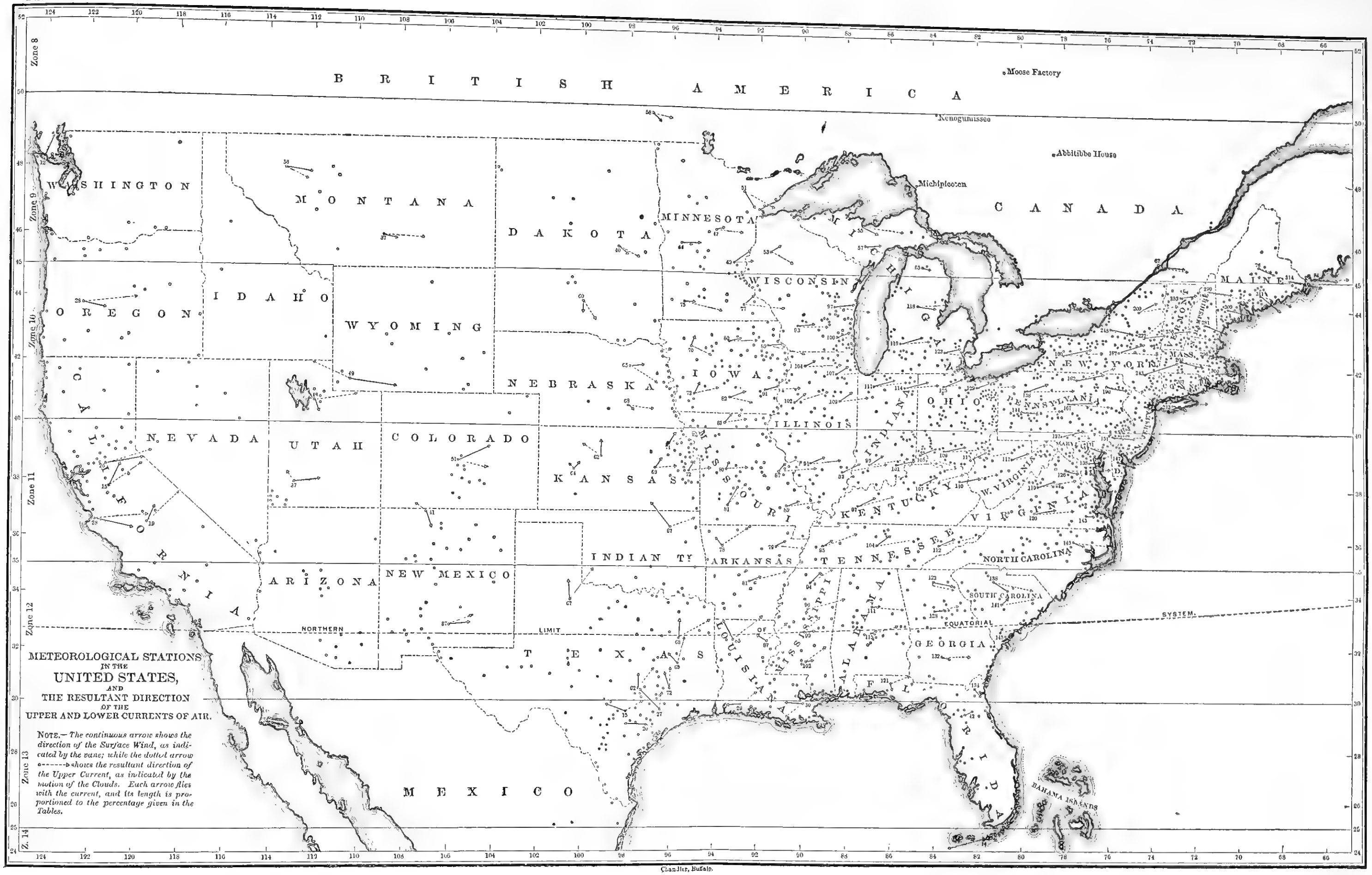
Deflecting Forces.

The "S-shaped" curves are divided into twelve parts to denote the path traversed by a particle of air, in each of the months of the year, when subjected to the winds that are found at Amherst, Massachusetts, Easton, Pennsylvania, New York City, Paris and Pekin, which are taken as representative places. In each case is seen the "parallelogram of forces," of which the diagonal represents the monthly resultant, one side one-twelfth of the yearly resultant, and another side the monsoon influence. Near each is gathered a parallel series of arrows to show the position of these monsoon influences relative to each other.

The law of the Monsoon Influences is seen in two facts: 1st. All these places, except Paris, are situated on the western shore of the adjacent oceans, and their monsoon influences are from the south-southeast in summer, and from the north-northwest in winter; but at Paris, not thus situated, their direction is reversed. And 2d. The monsoon influences at Pekin, which is emphatically in the monsoon region, and at New York, which is near the ocean, are greater than those at the other places which are not thus situated.

In the diagram at the right, in this Plate, representing an aggregate period of 560 years of observation, taken at more than 60 places in the State of New York, the approximate parallelism and equality of the arrows show the permanent character of the winds, and their divergence or inequality their annual mutations; yet the latter are rather apparent than real, since they are due chiefly to the introduction of new stations or discontinuance of old stations, so producing a slight modification of the result, and not indicating any really marked differences in the annual resultants. Two striking instances of diurnal variation in the direction of the wind are given on the lower part of the Plate for Hudson, Ohio, and St. Petersburg, which are easily explained by the proximity of each of these places to a considerable body of water situated north and northwest of them.

PLATE 1.



Chandler, Buffalo.

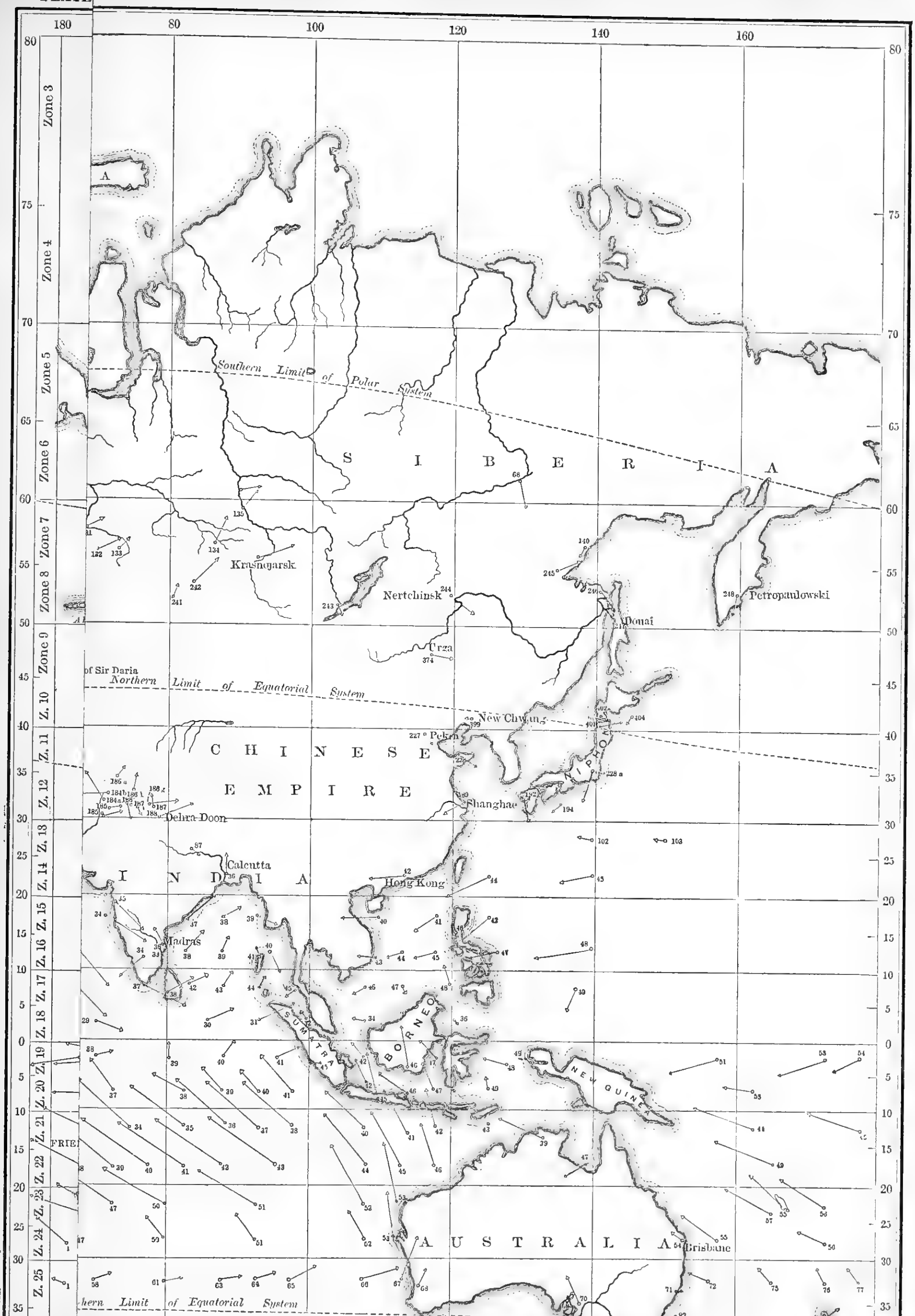
PLATE 2.

PLATE 2.

RESULTANTS OF THE ANNUAL DIRECTION OF THE WINDS IN THE ARCTIC REGIONS.

POLAR PROJECTION.

PLATE



Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Zone 9
Z. 10
Z. 11
Z. 12
Z. 13
Z. 14
Z. 15
Z. 16
Z. 17
Z. 18
Z. 19
Z. 20
Z. 21
Z. 22
Z. 23
Z. 24
Z. 25
Z. 26
Zone 27
Zone 28
Zone 29
Southern Limit of Polar System
S I B E R I A
Krasnojarsk
Nertchinsk
Petropaulowski
Douai
Urga
of Sir Daria
Northern Limit of Equatorial System
New Chwang
Peking
C H I N E S E
E M P I R E
NIPHON
Shanghae
Dehra Doon
Calcutta
I N D I A
Hong Kong
Madras
SUMATRA
BORNEO
NEW GUINEA
A U S T R A L I A
Brisbane
hern Limit of Equatorial System
FRIE
Chat

PLATE 3.

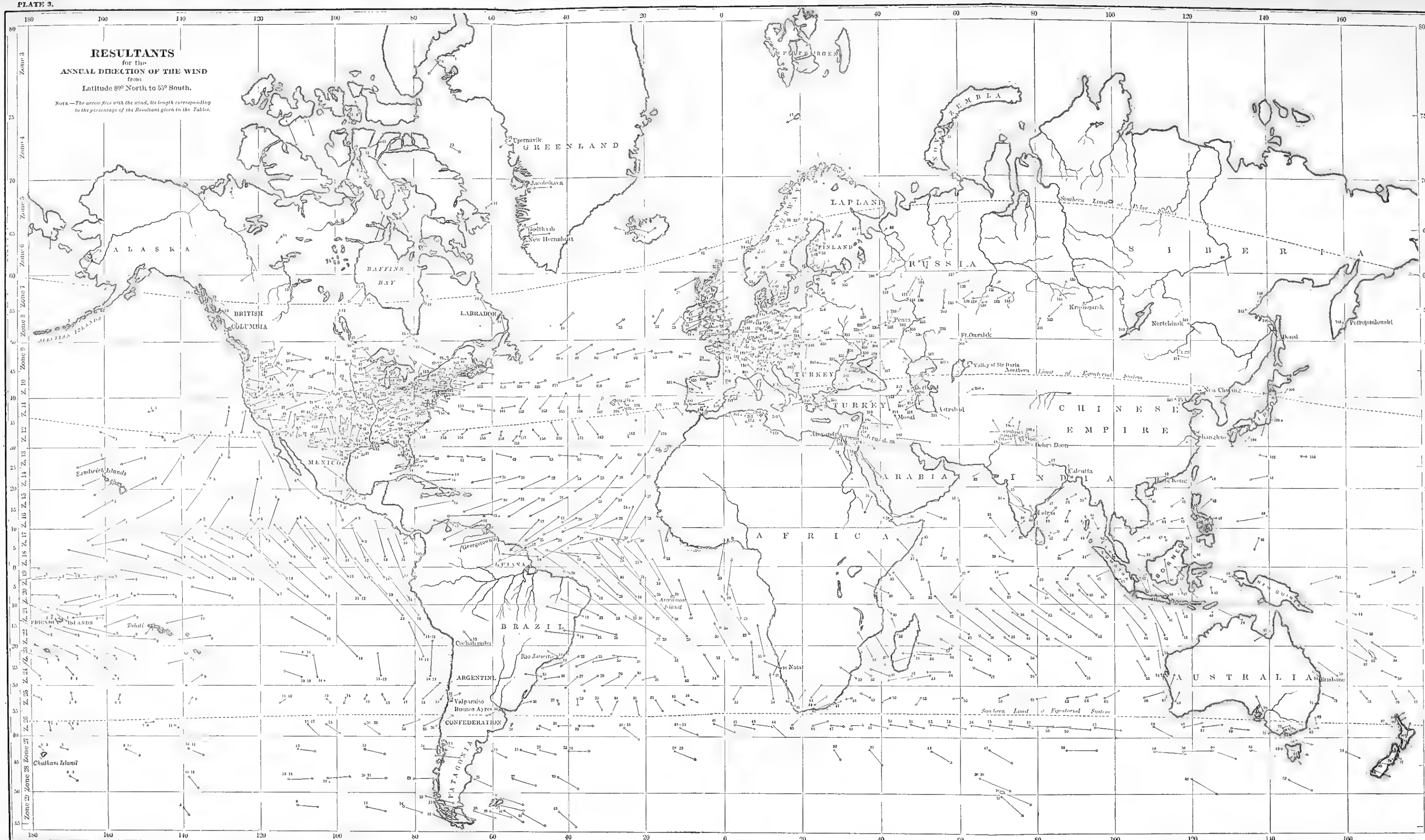

RESULTANTS
for the
ANNUAL DIRECTION OF THE WIND
from
Latitude 80° North to 55° South.
NOTE.—The arrow flies with the wind, its length corresponding to the percentage of the Resultant given in the Tables.
GREENLAND
ALASKA
BRITISH COLUMBIA
BAFFINS BAY
LABRADOR
MEXICO
Sandwich Islands
FRENCH ISLANDS
Tahiti
BRAZIL
ARGENTINE CONFEDERATION
PATAGONIA
Chatham Island
LAPLAND
FINLAND
RUSSIA
TURKEY
ARABIA
AFRICA
SIBERIA
CHINESE EMPIRE
INDIA
BORNEO
NEW GUINEA
AUSTRALIA
Southern Limit of Polar System
Northern Limit of Equatorial System
Southern Limit of Equatorial System

PLATE 4.

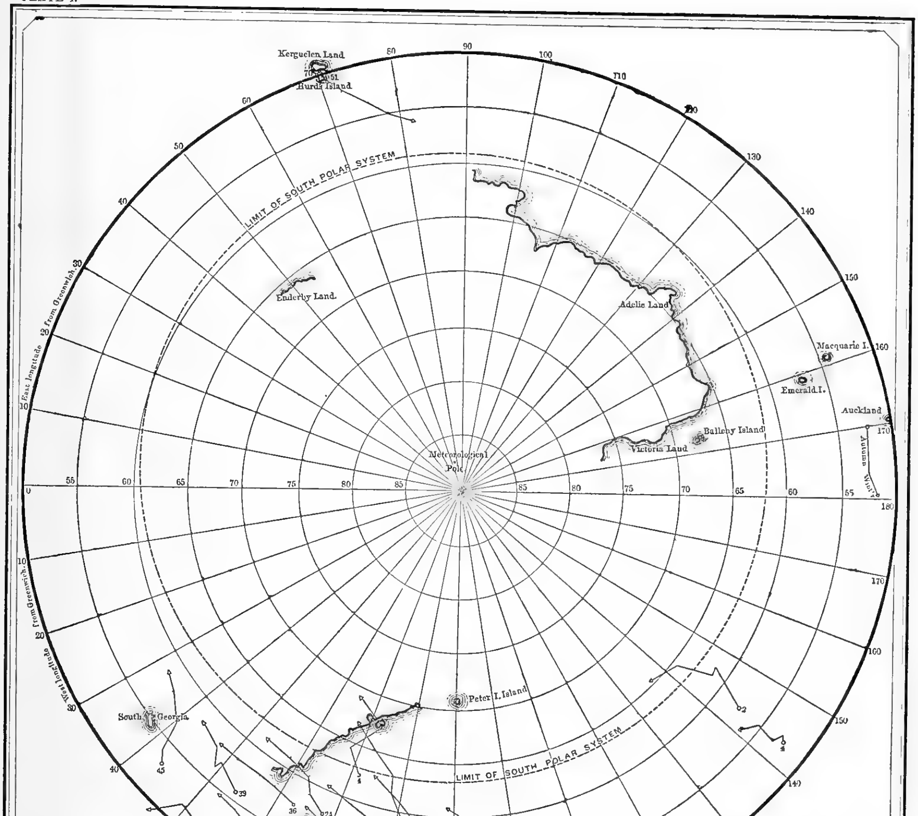

Kerguelen Land
Hurds Island
Enderby Land
LIMIT OF SOUTH POLAR SYSTEM
Adelie Land
Macquarie I.
Emerald I.
Auckland
Balleny Island
Victoria Land
Meteorological Pole
Peter I. Island
South Georgia
Falkland I.
SOUTH AMERICA
East longitude from Greenwich
West longitude from Greenwich
RESULTANTS
FOR DIRECTION OF THE WIND.
IN THE
SOUTH POLAR REGIONS
FOR THE
FOUR SEASONS
The arrow flies with the Wind
Each part of the arrow represents one season, and is projected to make with the meridian of the Station the angle given in the Tables.
NOTE — The seasons are designated as follows:
March, April, May . . . . I.
June, July, August . . . . S.
September, October, November . . . . . A.
December, January, February . . . . . W.
Station.

PLATE 5.

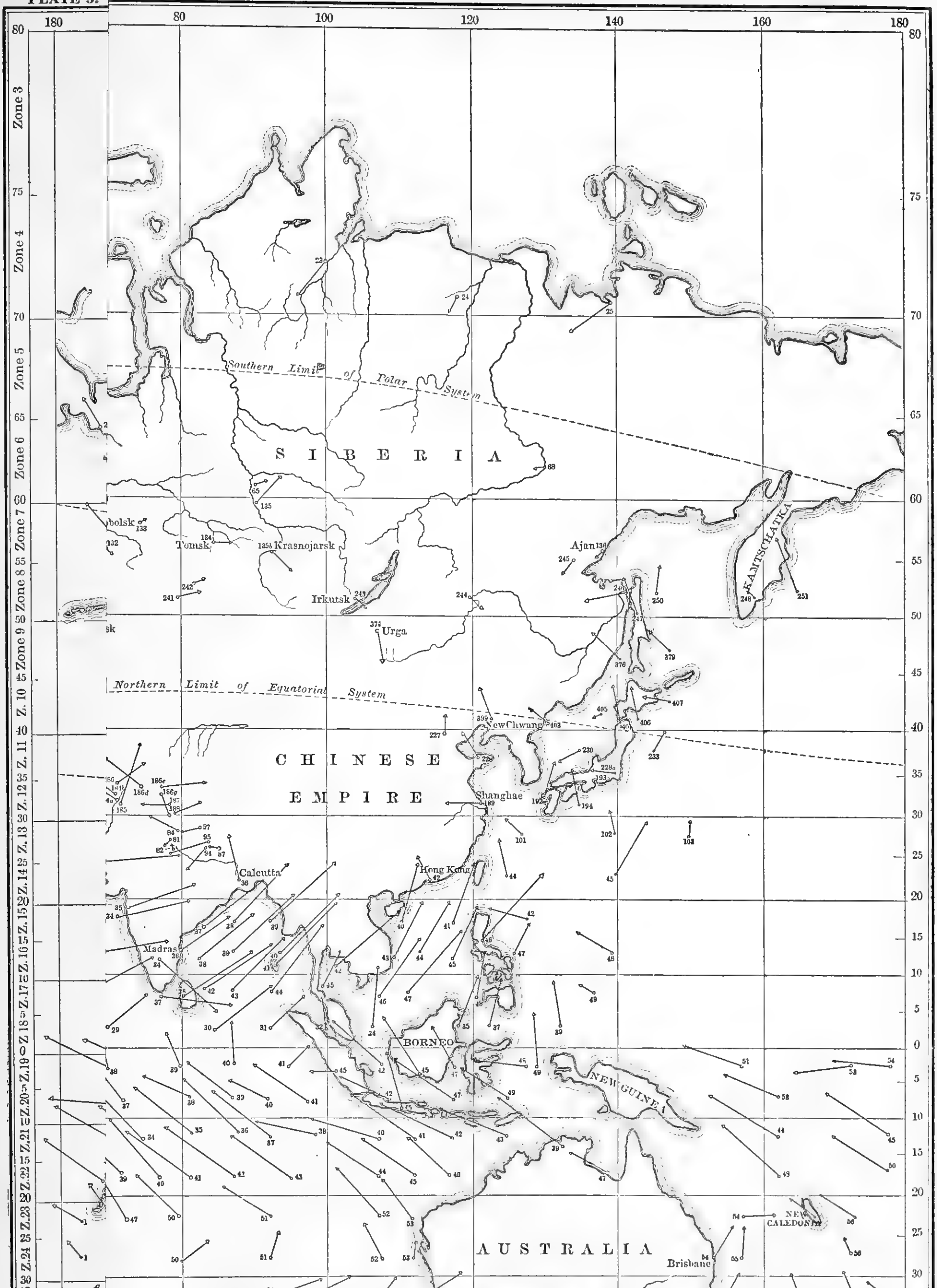
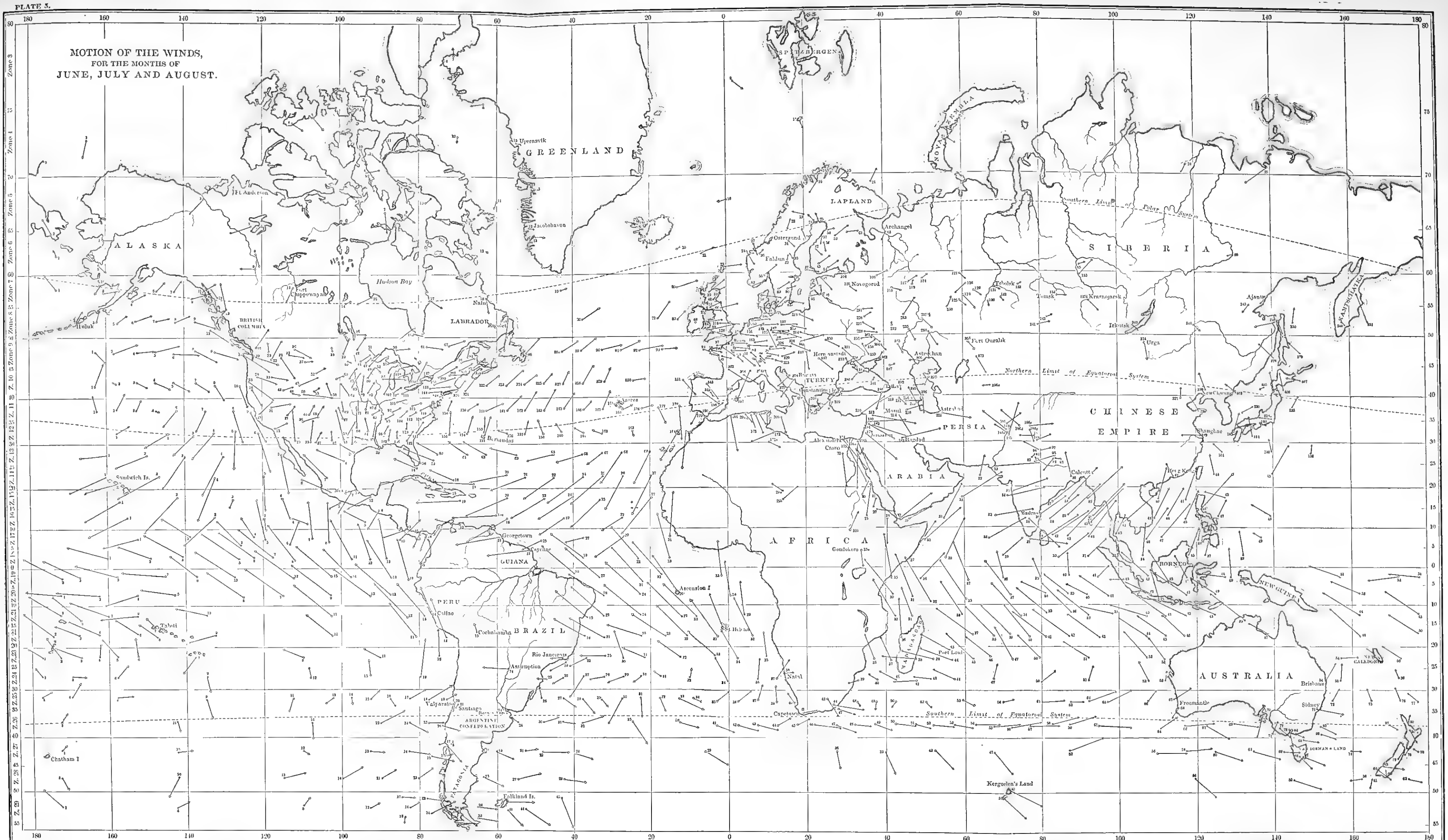
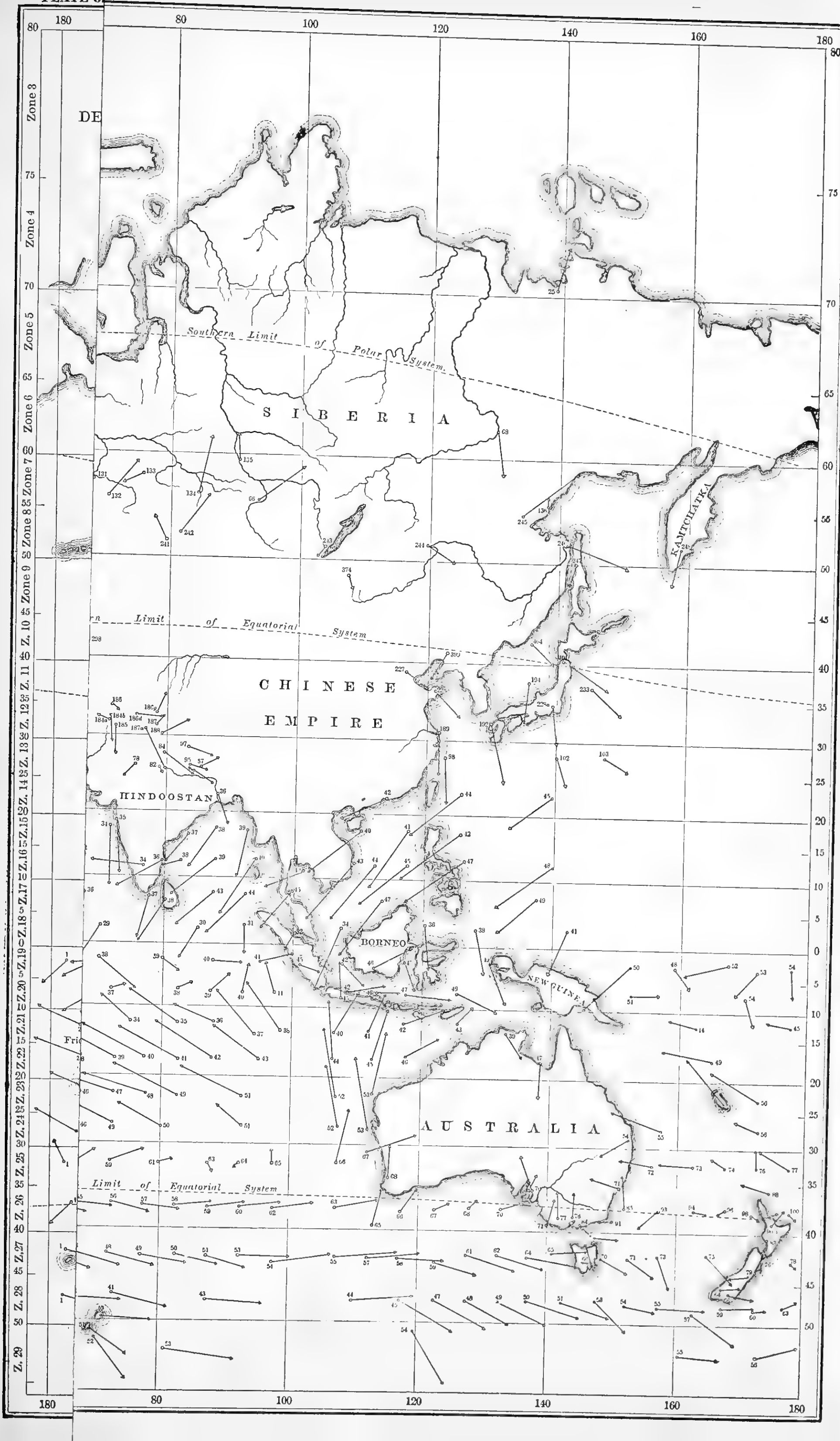

Southern Limit of Polar System
SIBERIA
Tomsk
Krasnojarsk
Irkutsk
Urga
Ajan
KAMTSCHATKA
Northern Limit of Equatorial System
New Chwang
CHINESE EMPIRE
Shanghae
Hong Kong
Calcutta
Madras
BORNEO
NEW GUINEA
AUSTRALIA
Brisbane
Sidney
Freemantle
VAN DIEMAN'S LAND
NEW CALEDONIA
Equatorial System

PLATE 3.


MOTION OF THE WINDS,
FOR THE MONTHS OF
JUNE, JULY AND AUGUST.
GREENLAND
ALASKA
Hudson Bay
LABRADOR
BRITISH COLUMBIA
LAPLAND
SIBERIA
TURKEY
PERSIA
CHINESE EMPIRE
ARABIA
AFRICA
GUIANA
PERU
BRAZIL
ARGENTINE CONFEDERATION
PATAGONIA
AUSTRALIA
BORNEO
NEW GUINEA
MADAGASCAR
SPITZBERGEN
NOVA ZEMLIA
KAMSCHATKA
Sandwich Is.
Tahiti
Chatham I
Falkland Is.
Kerguelen's Land
Ascension I
St. Helena
Southern Limit of Polar System
Northern Limit of Equatorial System
Southern Limit of Equatorial System



Southern Limit of Polar System.
SIBERIA
KAMTCHATKA
Limit of Equatorial System
CHINESE EMPIRE
HINDOOSTAN
BORNEO
NEW GUINEA
AUSTRALIA
Limit of Equatorial System

PLATE 6.

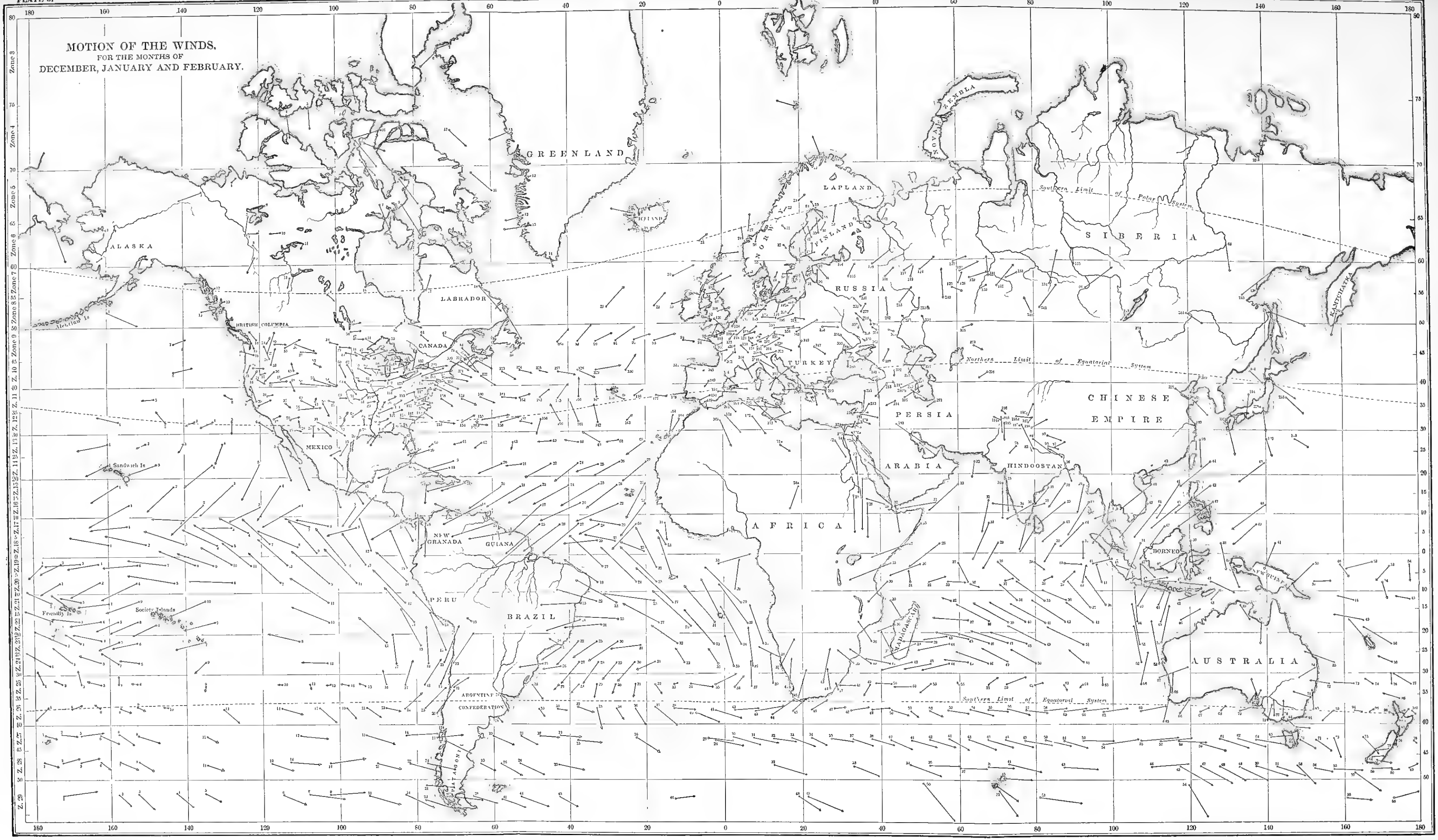
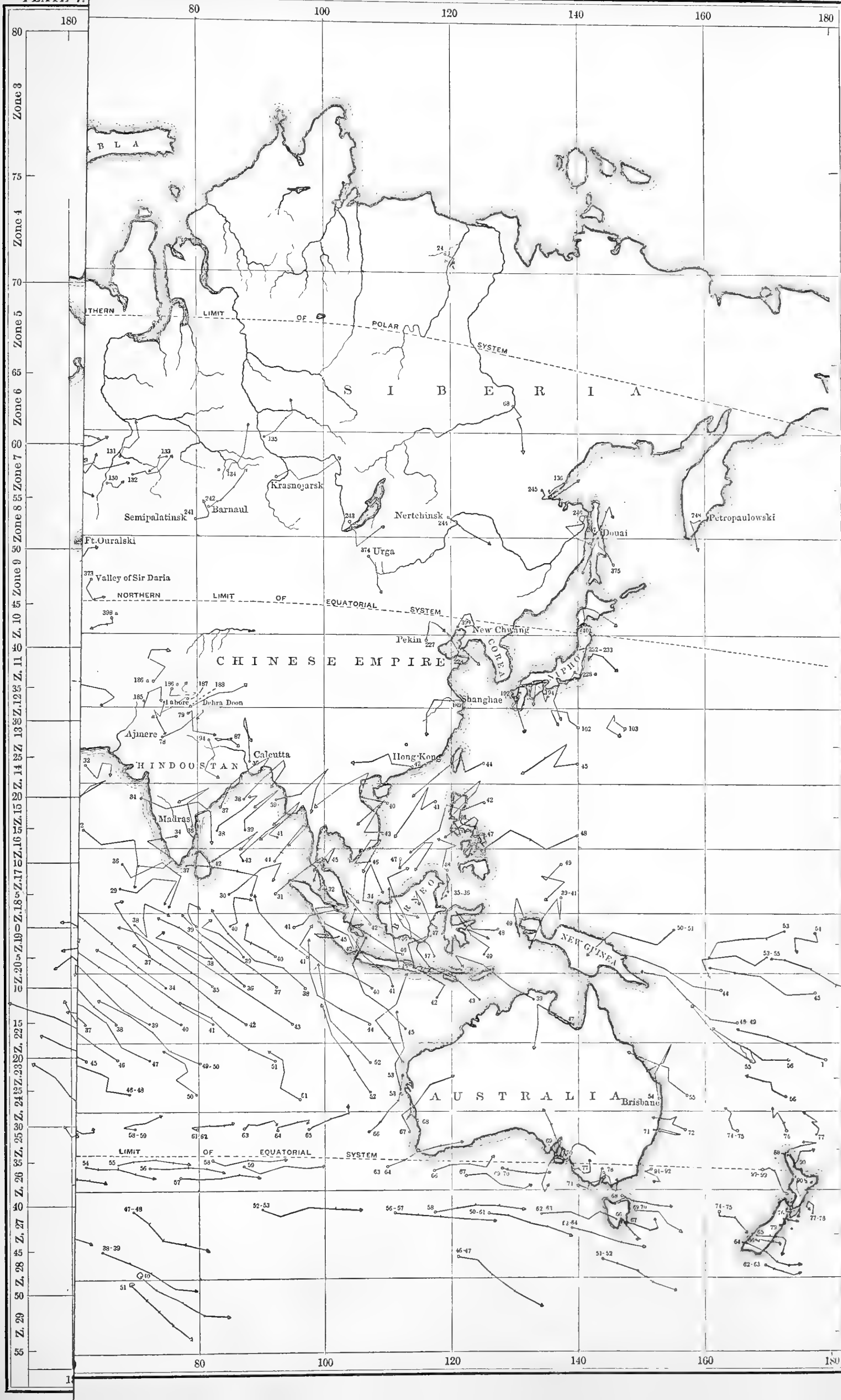

MOTION OF THE WINDS,
FOR THE MONTHS OF
DECEMBER, JANUARY AND FEBRUARY.
GREENLAND
ICELAND
LAPLAND
NORWAY
FINLAND
NOVA ZEMBLA
SIBERIA
RUSSIA
TURKEY
PERSIA
ARABIA
HINDOOSTAN
CHINESE EMPIRE
KAMTSCHATKA
ALASKA
Aleutian Is.
BRITISH COLUMBIA
LABRADOR
CANADA
MEXICO
Sandwich Is.
Friendly Is.
Society Islands
NEW GRANADA
GUIANA
PERU
BRAZIL
ARGENTINE CONFEDERATION
PATAGONIA
AFRICA
MADAGASCAR
BORNEO
NEW GUINEA
AUSTRALIA
Southern Limit of Polar System
Northern Limit of Equatorial System
Southern Limit of Equatorial System

PLATE 7.



SIBERIA
CHINESE EMPIRE
HINDOOSTAN
AUSTRALIA
NEW GUINEA
BORNEO
COREA
NIPHON
NORTHERN LIMIT OF POLAR SYSTEM
NORTHERN LIMIT OF EQUATORIAL SYSTEM
LIMIT OF EQUATORIAL SYSTEM
Krasnojarsk
Semipalatinsk
Barnaul
Nertchinsk
Urga
Petropaulowski
Douai
Ft. Ouralski
Valley of Sir Daria
New Chwang
Pekin
Shanghae
Hong-Kong
Lahore
Dehra Doon
Ajmere
Calcutta
Madras
Brisbane
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Zone 9
Z. 10
Z. 11
Z. 12
Z. 13
Z. 14
Z. 15
Z. 16
Z. 17
Z. 18
Z. 19
Z. 20
Z. 22
Z. 23
Z. 24
Z. 25
Z. 26
Z. 27
Z. 28
Z. 29
80
100
120
140
160
180

PLATE 7.

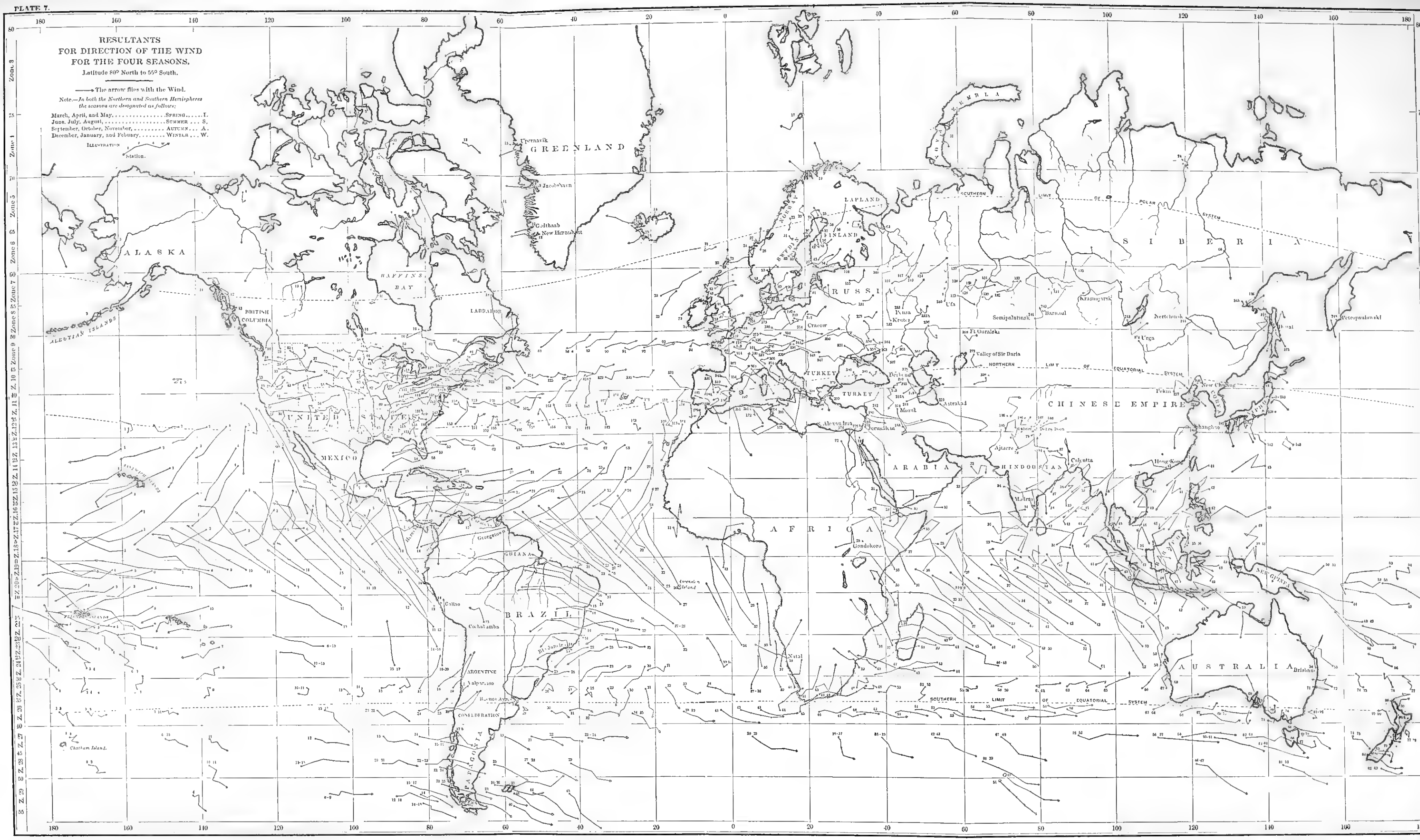
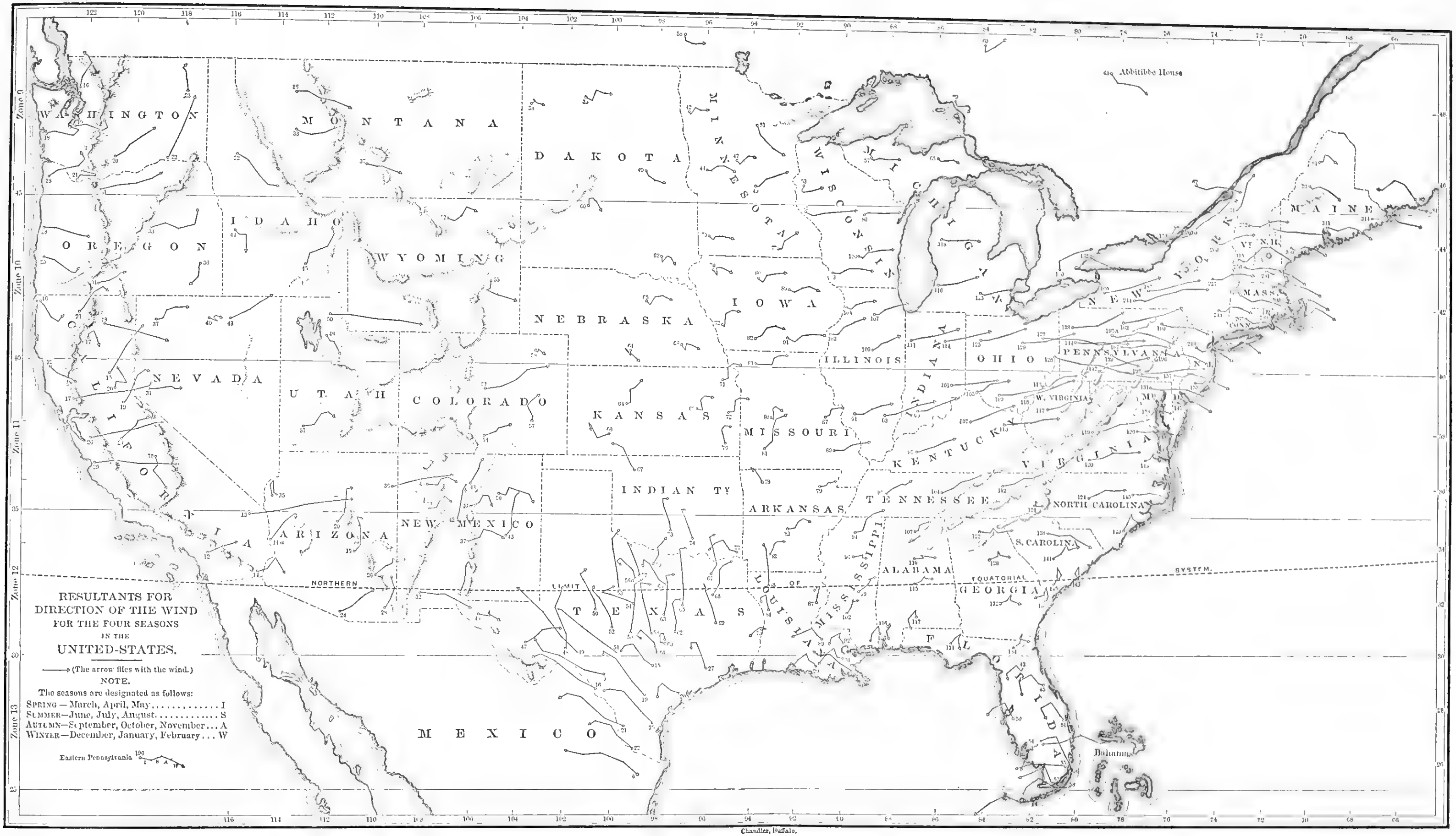

RESULTANTS
FOR DIRECTION OF THE WIND
FOR THE FOUR SEASONS.
Latitude 80° North to 55° South.
The arrow flies with the Wind.
Note.—In both the Northern and Southern Hemispheres the seasons are designated as follows:
March, April, and May. . . . . .SPRING. . . . . I.
June. July. August, ...SUMMER . . . S.
September, October, November, ... AUTUMN . . . A.
December, January, and Febuary. . . . . WINTER . . . W.
ILLUSTRATION
Station.
GREENLAND
Upernavik
Jacobshavn
Godthaab
New Herrnhut
ALASKA
ALEUTIAN ISLANDS
BAFFINS BAY
LABRADOR
BRITISH COLUMBIA
UNITED STATES
MEXICO
Georgetown
GUIANA
Callao
Cochabamba
BRAZIL
Rio Janeiro
ARGENTINE
Valparaiso
Buenos Ayres
CONFEDERATION
PATAGONIA
Chatham Island
LAPLAND
FINLAND
NORWAY
SWEDEN
RUSSIA
Cracow
TURKEY
Alexandria
Jerusalem
Mosul
Astrabad
Valley of Sir Daria
Ft. Ouralski
Penza
Kazan
Ufa
Semipalatinsk
Barnaul
Krasnoyarsk
Nertchinsk
Urga
Petropaulowski
SIBERIA
SOUTHERN LIMIT OF POLAR SYSTEM
NORTHERN LIMIT OF EQUATORIAL SYSTEM
SOUTHERN LIMIT OF EQUATORIAL SYSTEM
CHINESE EMPIRE
Pekin
New Chwang
Shanghae
Hong-Kong
ARABIA
HINDOOSTAN
Calcutta
Madras
AFRICA
Gondokoro
Ascension Island
Natal
NEW GUINEA
AUSTRALIA
Brisbane
NOVA ZEMBLA
JAPAN
COREA

PLATE 8.



Chandler, Buffalo.

PLATE 9.

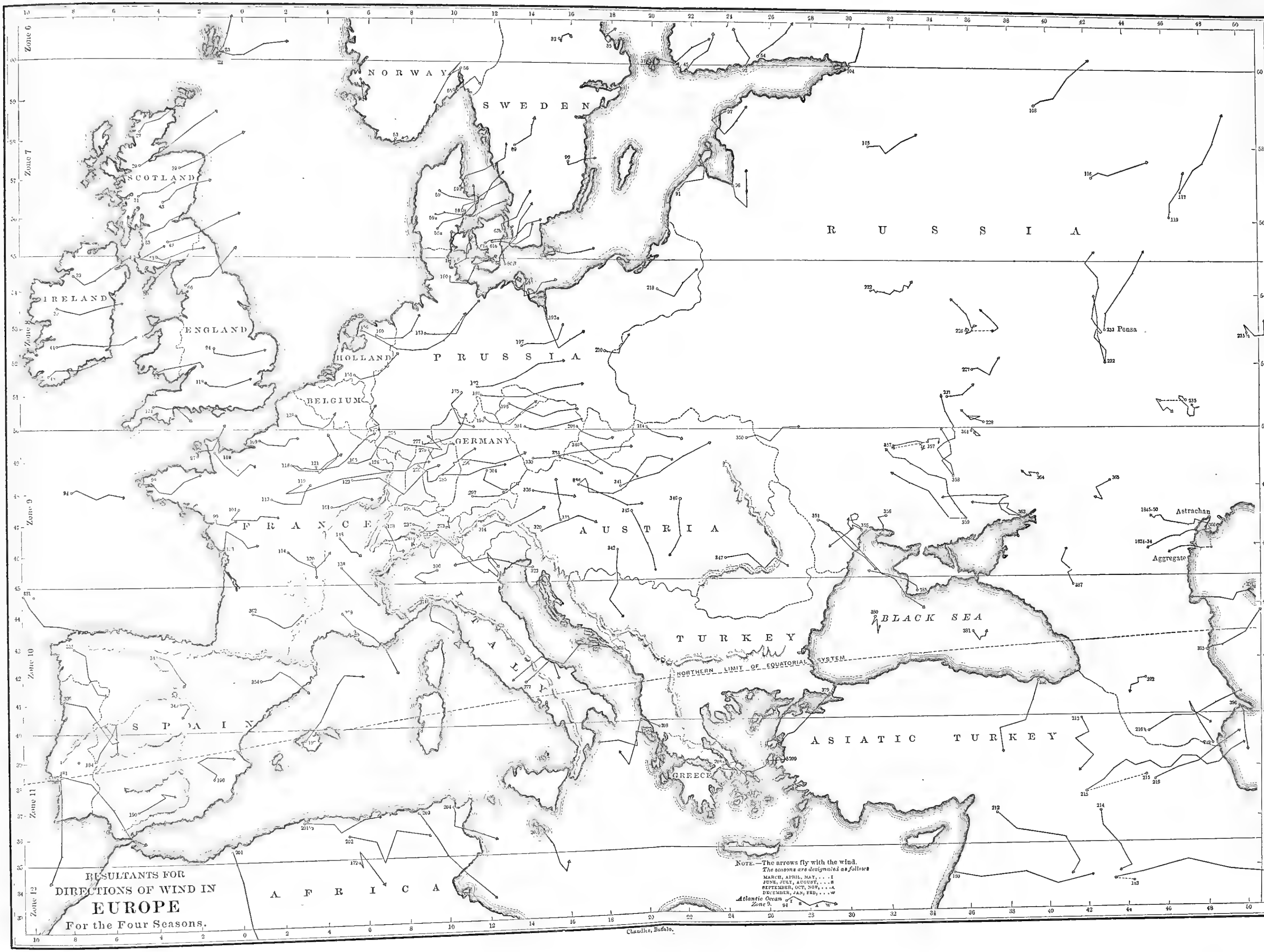
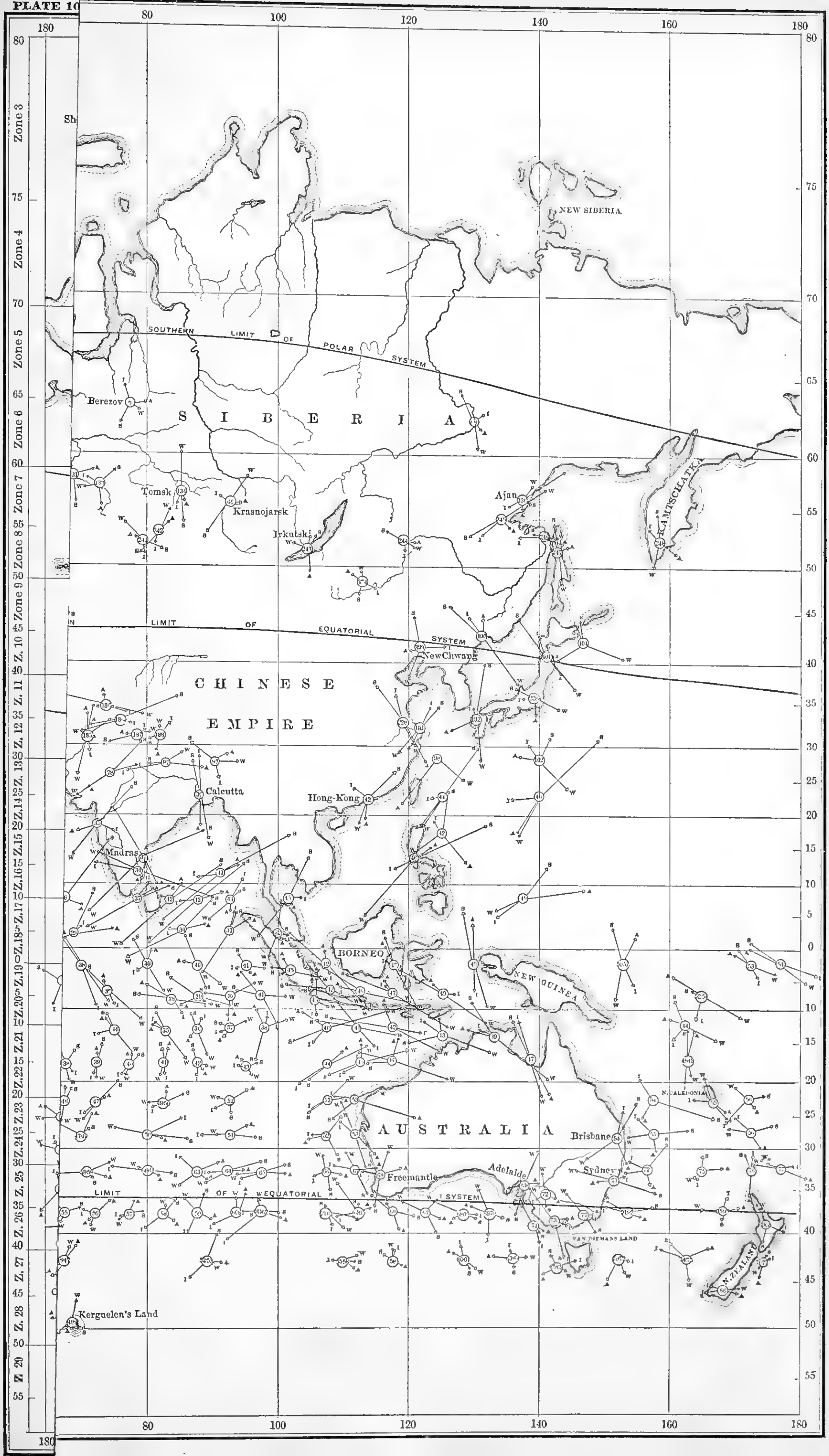

RESULTANTS FOR
DIRECTIONS OF WIND IN
EUROPE
For the Four Seasons.
NOTE.—The arrows fly with the wind.
The seasons are designated as follows
MARCH, APRIL, MAY, . . . I
JUNE, JULY, AUGUST, . . . S
SEPTEMBER, OCT, NOV, . . . A
DECEMBER, JAN, FEB, . . . W
Atlantic Ocean
Zone 9.
NORWAY
SWEDEN
RUSSIA
SCOTLAND
IRELAND
ENGLAND
HOLLAND
BELGIUM
PRUSSIA
GERMANY
FRANCE
AUSTRIA
ITALY
SPAIN
TURKEY
BLACK SEA
ASIATIC TURKEY
GREECE
AFRICA
Pensa
Astrachan
Aggregate
NORTHERN LIMIT OF EQUATORIAL SYSTEM
Zone 6
Zone 7
Zone 8
Zone 9
Zone 10
Zone 11
Zone 12
Chandler, Buffalo.

PLATE 10



NEW SIBERIA
SOUTHERN LIMIT OF POLAR SYSTEM
Berezov
S I B E R I A
KAMSCHATKA
Tomsk
Krasnojarsk
Irkutsk
Ajan
LIMIT OF EQUATORIAL SYSTEM
NewChwang
CHINESE EMPIRE
Calcutta
Hong-Kong
Madras
BORNEO
NEW GUINEA
N. CALEDONIA
AUSTRALIA
Brisbane
Sydney
Adelaide
Freemantle
LIMIT OF EQUATORIAL SYSTEM
VAN DIEMANS LAND
N. ZEALAND
Kerguelen's Land
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Zone 9
Z. 10
Z. 11
Z. 12
Z. 13
Z. 14
Z. 15
Z. 16
Z. 17
Z. 18
Z. 19
Z. 20
Z. 21
Z. 22
Z. 23
Z. 24
Z. 25
Z. 26
Z. 27
Z. 28
Z. 29

PLATE 10.

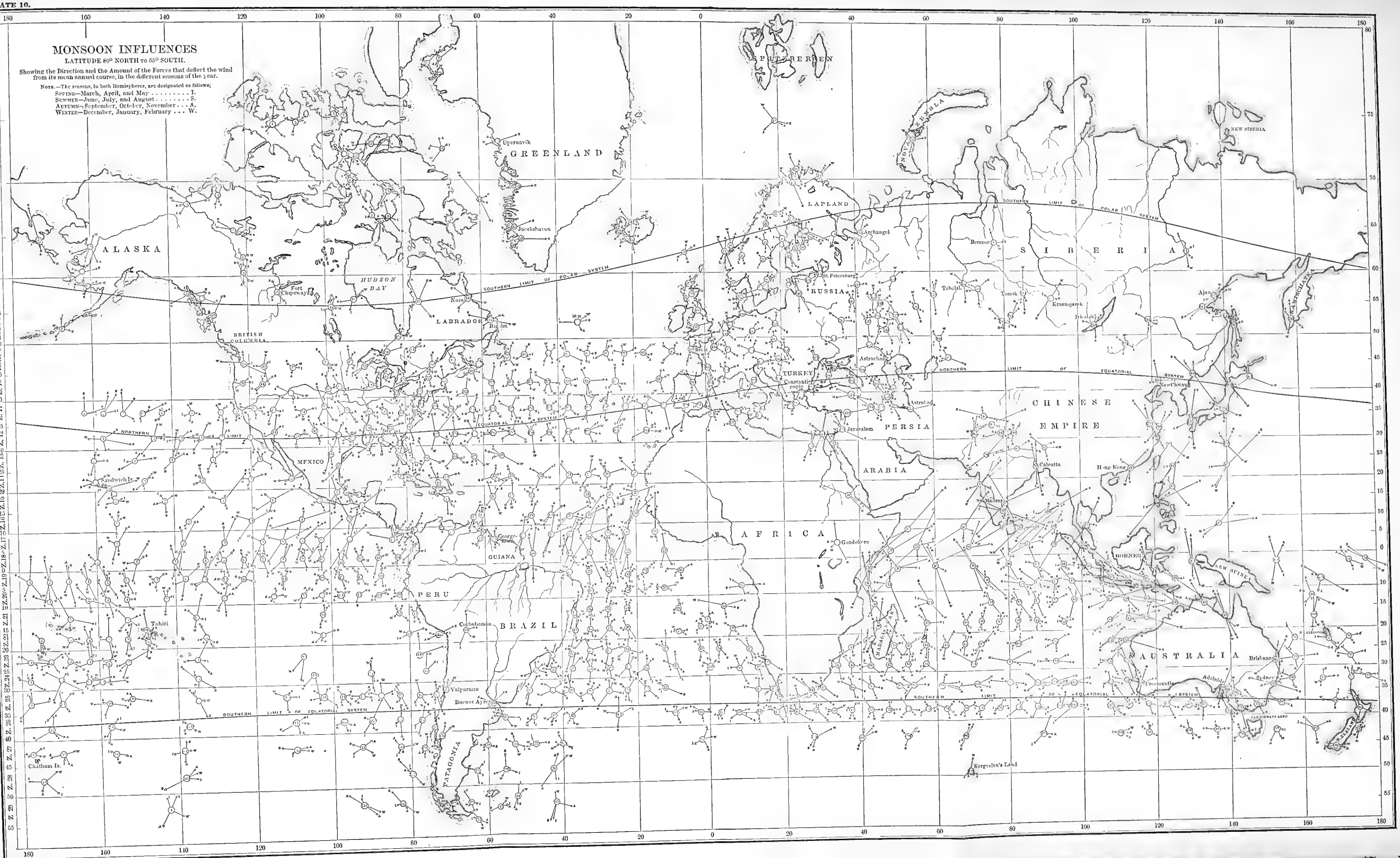
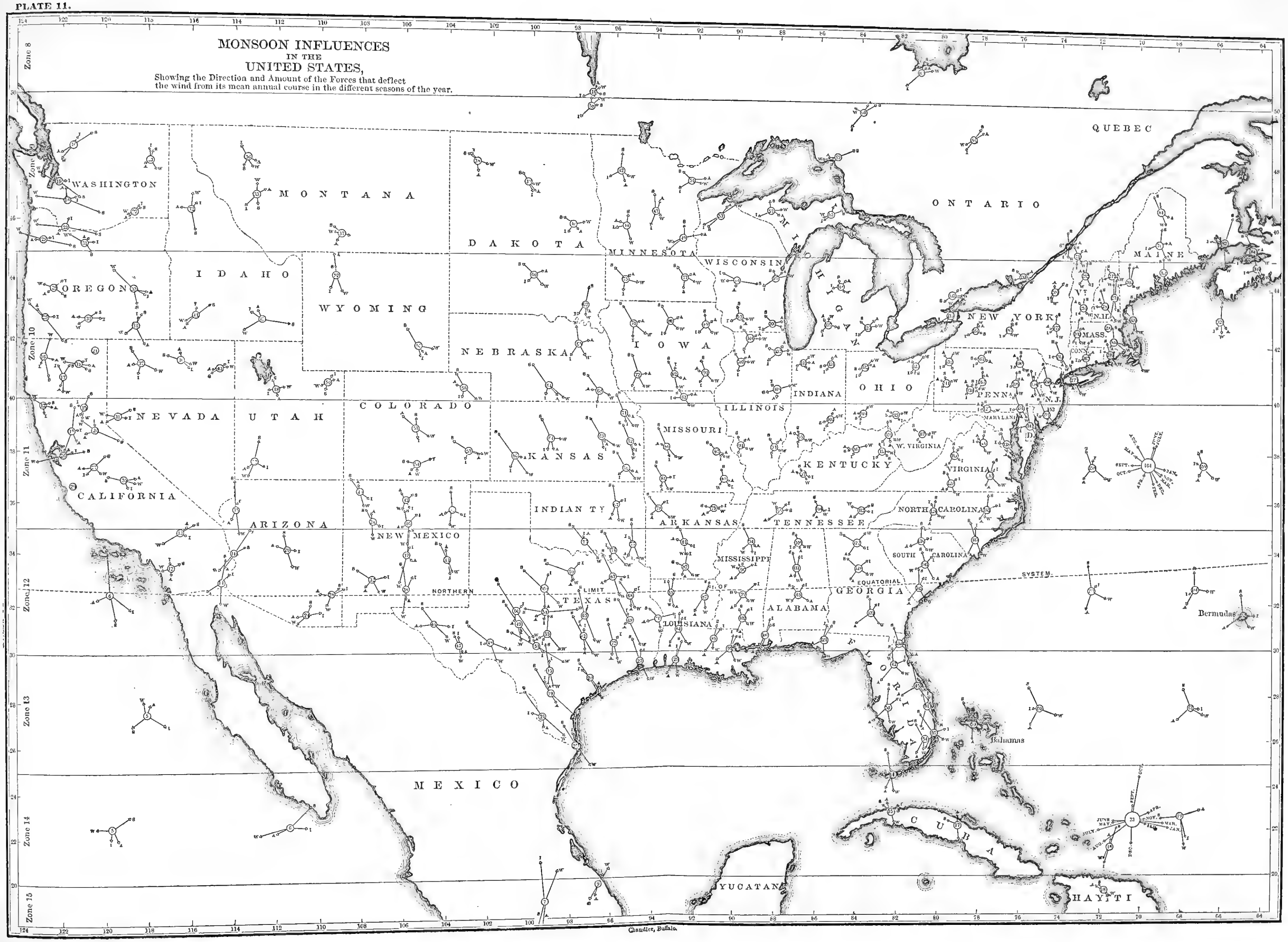
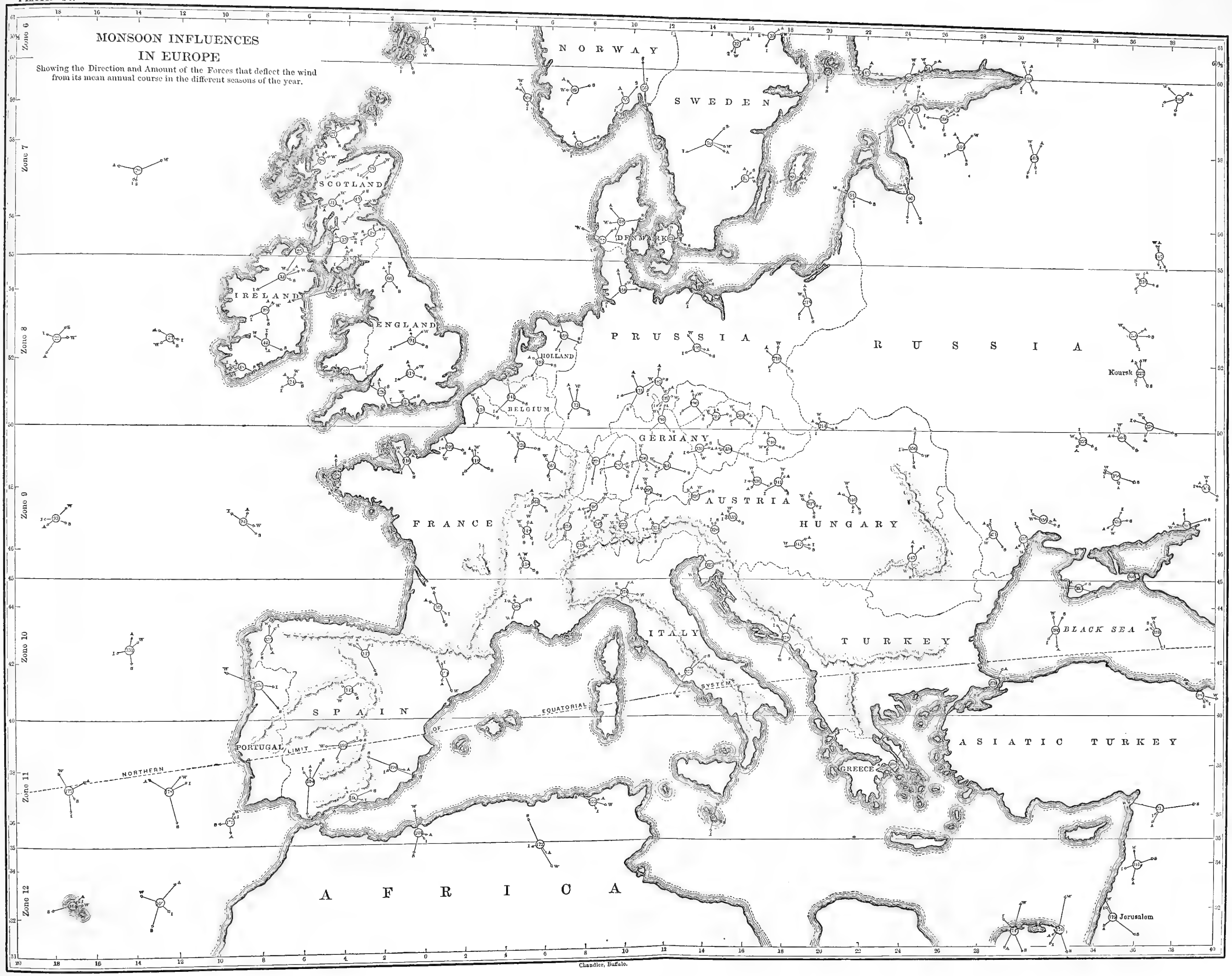

MONSOON INFLUENCES
LATITUDE 80° NORTH TO 55° SOUTH.
Showing the Direction and the Amount of the Forces that deflect the wind from its mean annual course, in the different seasons of the year.
NOTE.—The seasons, in both Hemispheres, are designated as follows;
SPRING—March, April, and May . . . . I.
SUMMER—June, July, and August . . . . S.
AUTUMN—September, October, November . . . A.
WINTER—December, January, February . . . W.
SPITZBERGEN
GREENLAND
Upernavik
Jacobshaven
ALASKA
HUDSON BAY
Fort Chipewayan
Nain
LABRADOR
BRITISH COLUMBIA
SOUTHERN LIMIT OF POLAR SYSTEM
NORTHERN LIMIT OF EQUATORIAL SYSTEM
SOUTHERN LIMIT OF EQUATORIAL SYSTEM
MEXICO
Sandwich Is.
Tahiti
GUIANA
Georgetown
PERU
BRAZIL
Cochabamba
Valparaiso
Buenos Ayres
PATAGONIA
Chatham Is.
NOVA ZEMBLA
NEW SIBERIA
LAPLAND
Archangel
St. Petersburg
RUSSIA
Berezov
Tobolsk
Tomsk
Krasnojarsk
SIBERIA
KAMTSCHATKA
Ajan
Astrachan
TURKEY
Constantinople
Jerusalem
PERSIA
Astrabad
CHINESE EMPIRE
NewChwang
ARABIA
Calcutta
Hong-Kong
Madras
AFRICA
Gondokoro
BORNEO
NEW GUINEA
AUSTRALIA
Brisbane
Sydney
Adelaide
Freemantle
Kerguelen's Land
NEW ZEALAND

PLATE 11.

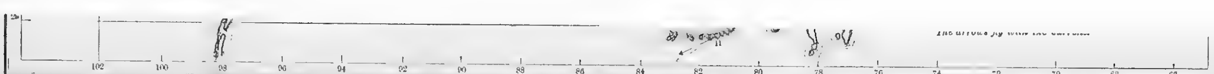


Chandler, Buffalo.

PLATE 12.



Chandler, Buffalo.


102
100
98
96
94
92
90
88
86
84
82
80
78
76
74
72
70
68
66

ISOBARIC LINES FOR **JANUARY.**

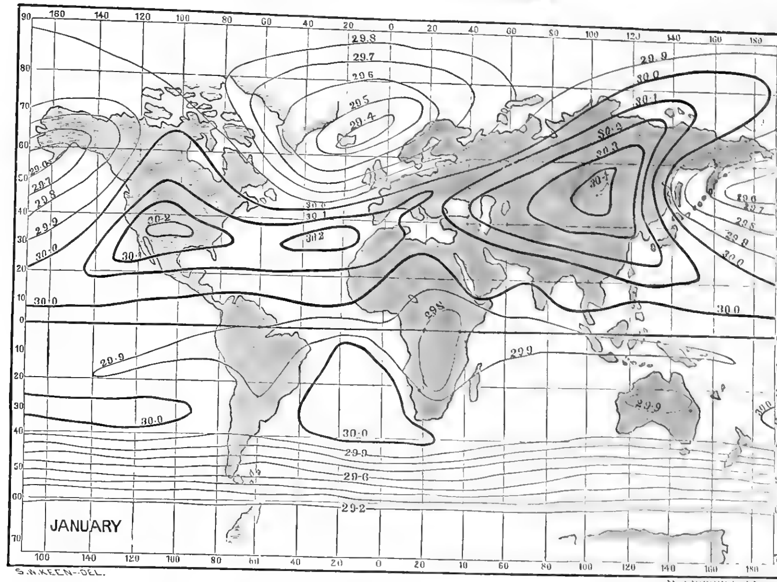
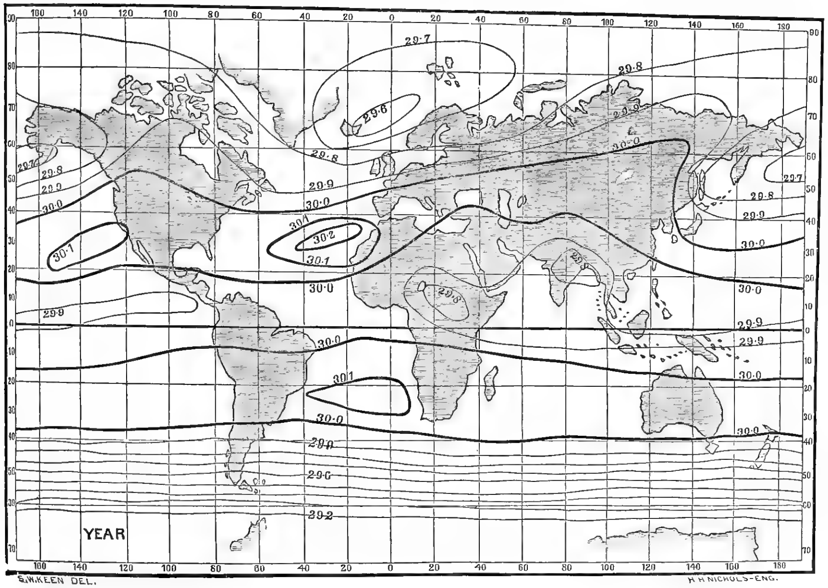


CHART EXHIBITING BY ISOBARIC LINES THE MEAN PRESSURE OF THE ATMOSPHERE.

FOR THE **YEAR.**

PLATE 14.



ISOBARIC LINES FOR **JULY.**

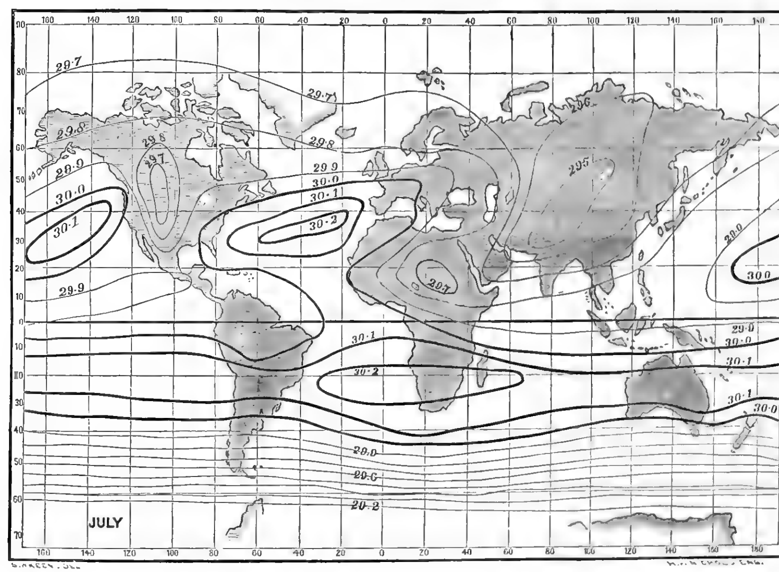


PLATE 13.

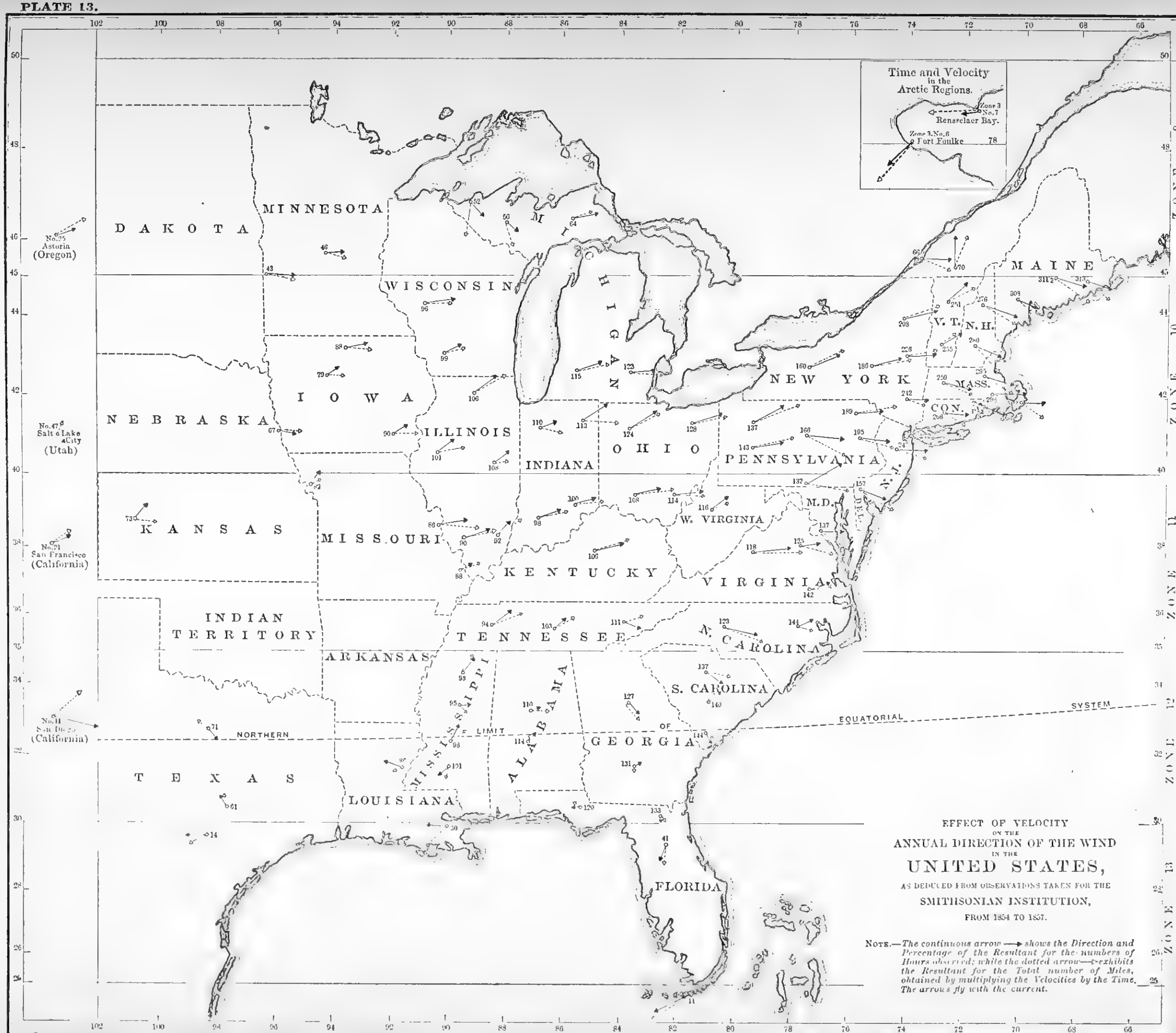

EFFECT OF VELOCITY
ON THE
ANNUAL DIRECTION OF THE WIND
IN THE
UNITED STATES,
AS DEDUCED FROM OBSERVATIONS TAKEN FOR THE
SMITHSONIAN INSTITUTION,
FROM 1854 TO 1857.
NOTE.—The continuous arrow ⟶ shows the Direction and Percentage of the Resultant for the numbers of Hours observed; while the dotted arrow exhibits the Resultant for the Total number of Miles, obtained by multiplying the Velocities by the Time. The arrows fly with the current.
Time and Velocity in the Arctic Regions.
Zone 3 No. 7 Rensselaer Bay.
Zone 3 No. 6 Fort Foulke
DAKOTA
MINNESOTA
WISCONSIN
MICHIGAN
IOWA
NEBRASKA
ILLINOIS
INDIANA
OHIO
NEW YORK
PENNSYLVANIA
MAINE
V. T.
N. H.
MASS.
CON.
N. J.
DEL.
M.D.
W. VIRGINIA
VIRGINIA
KANSAS
MISSOURI
KENTUCKY
INDIAN TERRITORY
ARKANSAS
TENNESSEE
N. CAROLINA
S. CAROLINA
MISSISSIPPI
ALABAMA
GEORGIA
TEXAS
LOUISIANA
FLORIDA
NORTHERN LIMIT OF EQUATORIAL SYSTEM
No. 25 Astoria (Oregon)
No. 47 Salt Lake City (Utah)
No. 21 San Francisco (California)
No. 11 San Diego (California)
ZONE 9
ZONE 10
ZONE 11
ZONE 12
ZONE 13

PLATE 15.

PERCENTAGE OF WINDS IN SUMMER AND WINTER IN THE ARCTIC REGIONS.

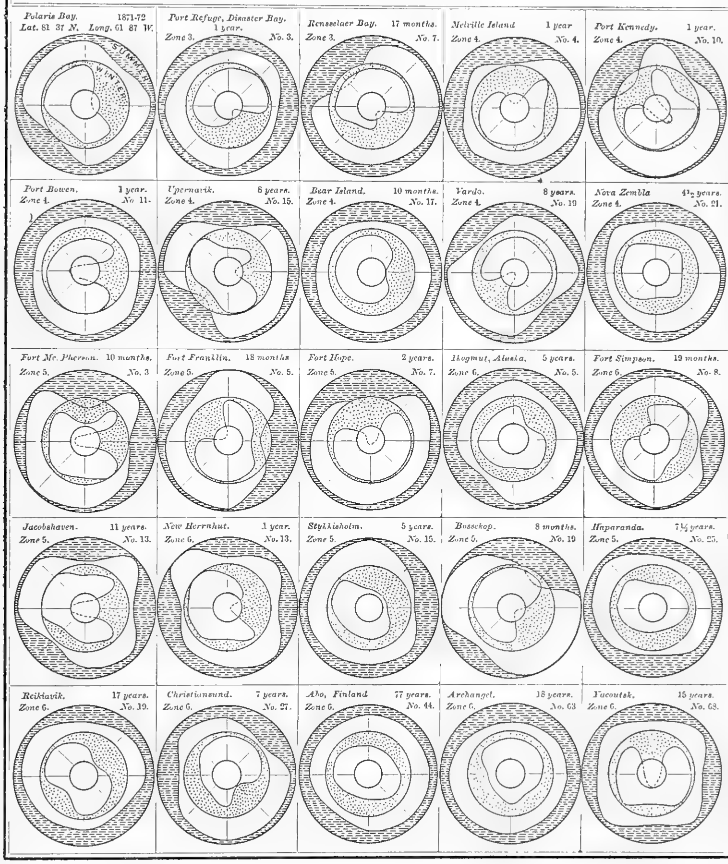


PLATE 16.

PERCENTAGE OF WINDS
IN SUMMER AND WINTER
IN EUROPE
SOUTH OF LAT. 60°.

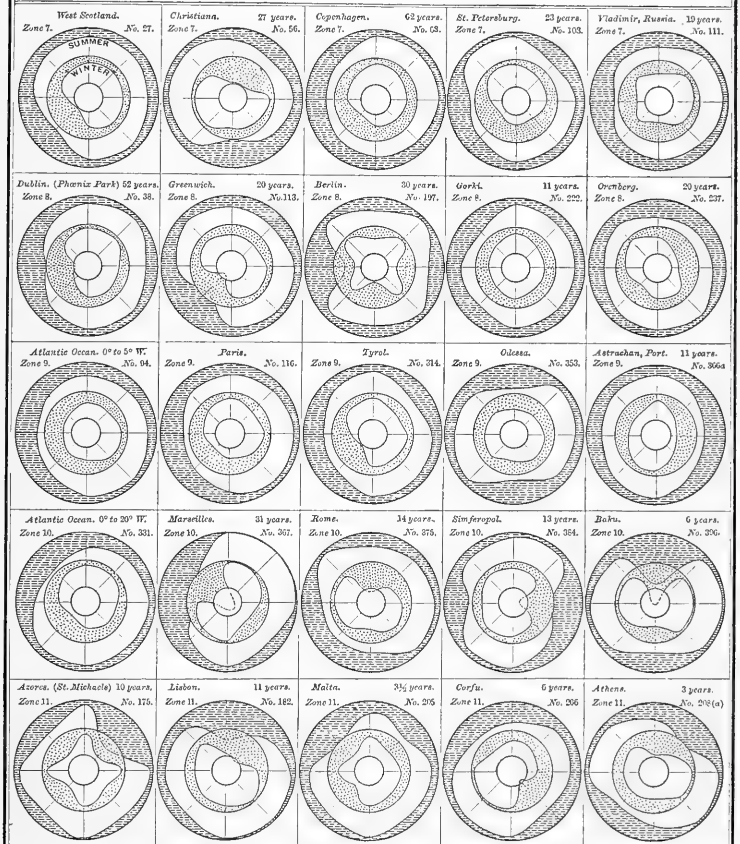


PLATE 17.

PERCENTAGE OF WINDS
IN SUMMER AND WINTER
IN ASIA AND AFRICA.
LAT. 25° TO 60° N<u>TH</u>

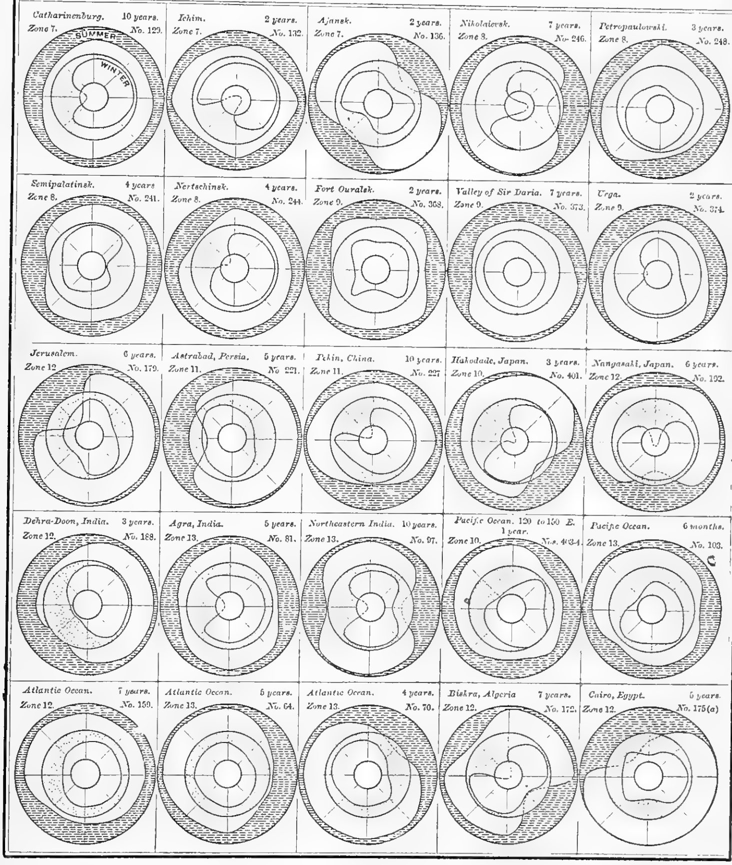


PLATE 18.

PERCENTAGE OF WINDS

IN SUMMER AND WINTER

IN THE TROPICAL REGIONS

NORTH OF THE EQUATOR.

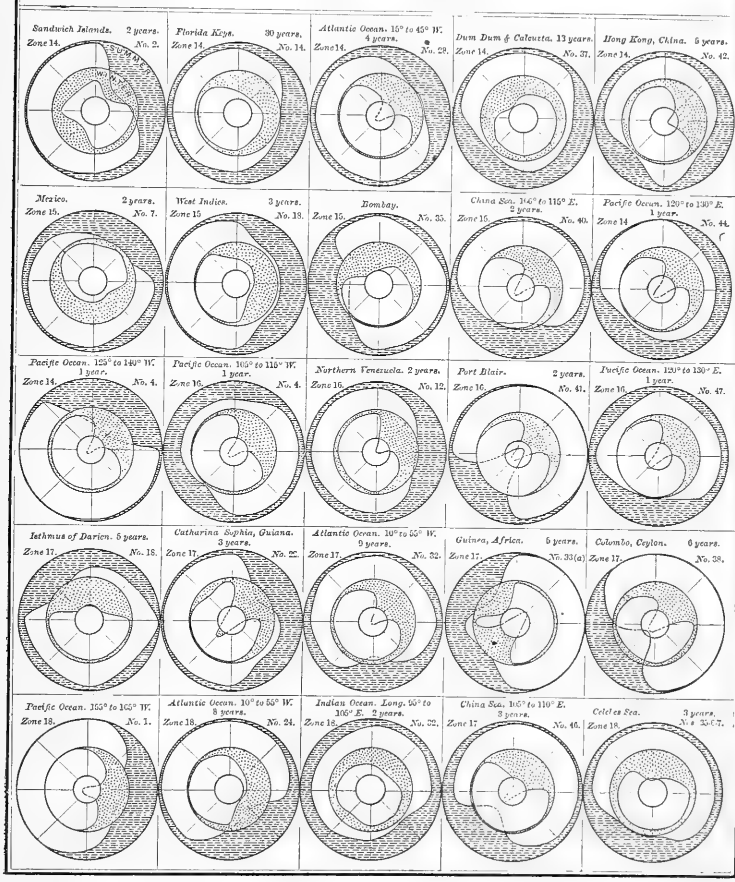


PLATE 19.

PERCENTAGE OF WINDS
IN SUMMER AND WINTER, IN THE TROPICAL REGIONS, SOUTH OF THE EQUATOR.

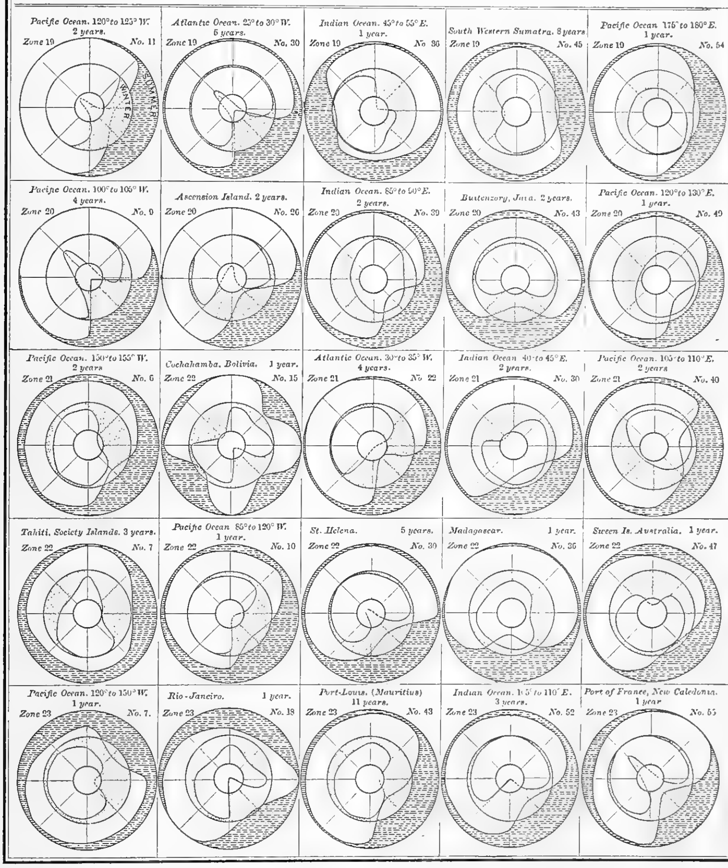


PLATE 20.

PERCENTAGE OF WINDS IN SUMMER AND WINTER IN THE SOUTH TEMPERATE ZONE.

LAT. 25° TO 60° SOUTH.

NOTE.—Summer=*June, July, August;* Winter=*December, January, February.*

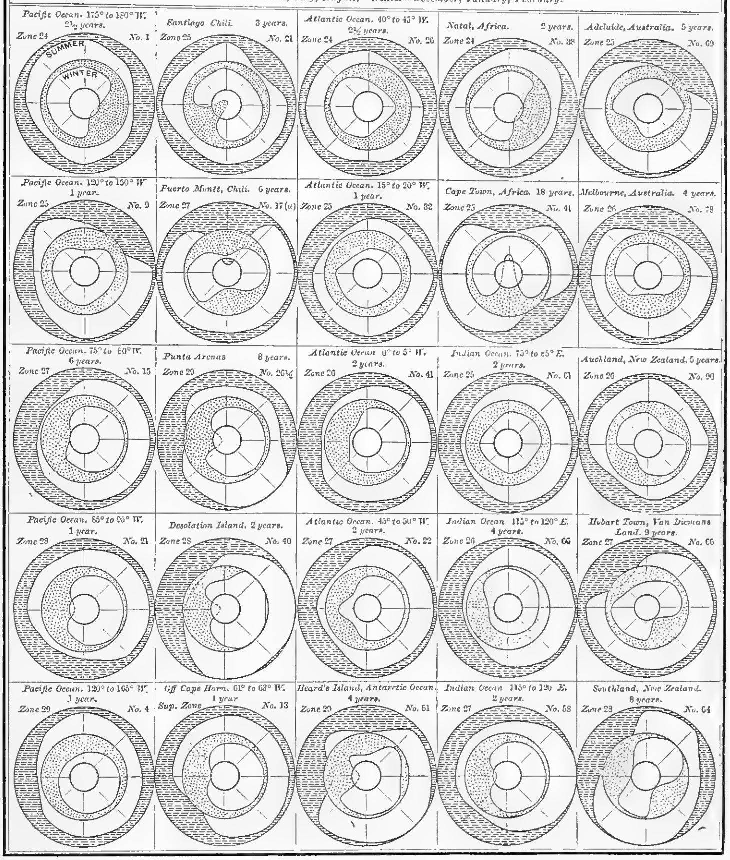
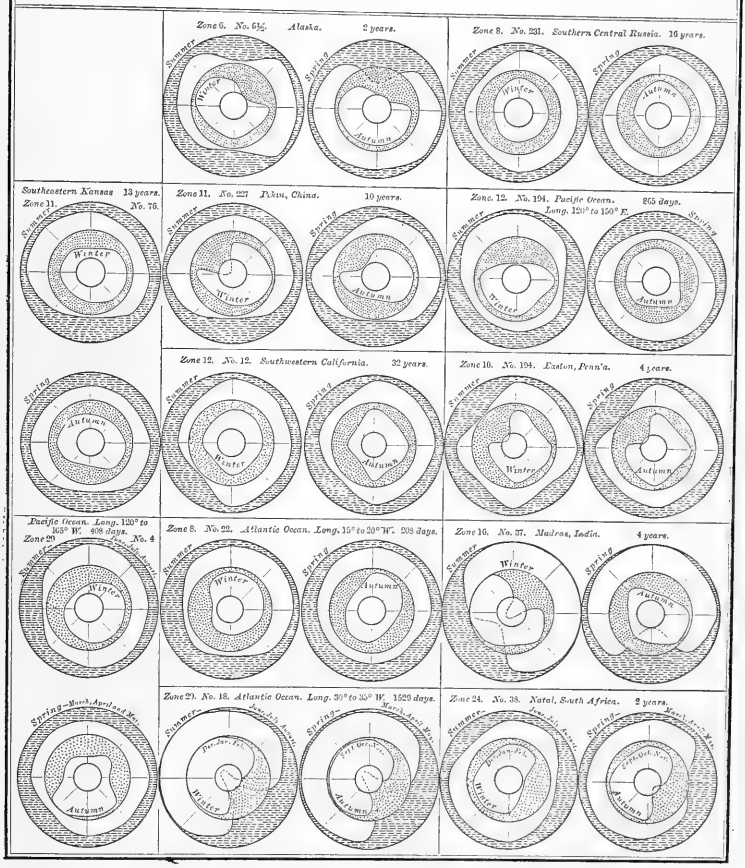


PLATE 21.

PERCENTAGE OF WINDS
FOR THE
FOUR SEASONS.



PERCENTAGE OF WINDS
IN THE
UNITED STATES
IN SUMMER AND WINTER
ILLUSTRATED BY VERTICAL PROJECTION.

NOTE.—*The horizontal width of the vertical bands is proportional to the percentage of winds for the place named on the same horizontal line. The width of each square corresponds to ten per cent in the Tables.*

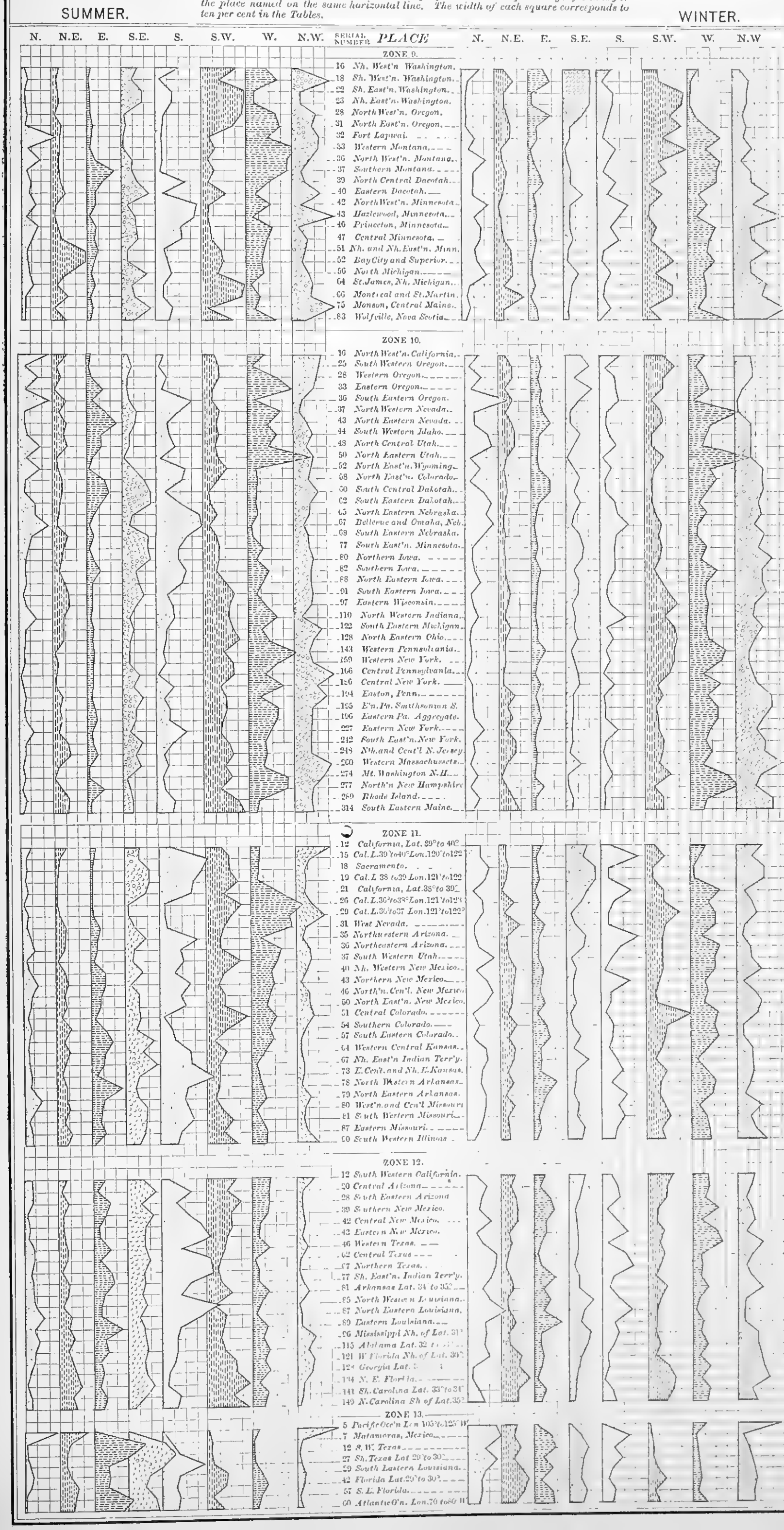
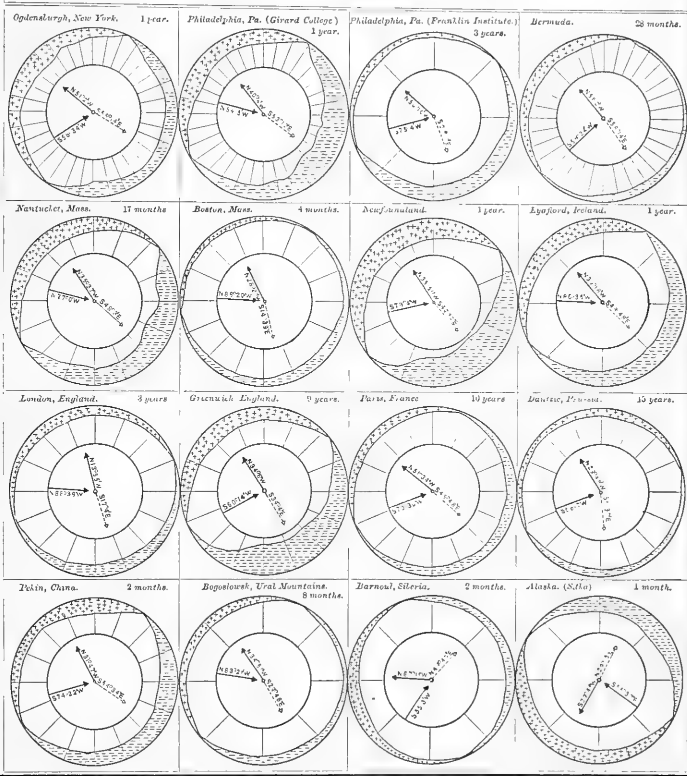


PLATE 23.

BAROMETRICAL WIND ROSES
SHOWING THE CONNECTION BETWEEN THE
DIRECTION OF THE WIND AND CHANGES IN THE BAROMETER.
COMPUTED AND DRAWN BY JAMES H. COFFIN.

1853.



The width of the shading at the several points of compass shows the average RISE or FALL of the Barometer per day while the wind is from those points; the plus (+) denoting a rise, and the minus (—) a fall. The arrows that proceed from the centre, show the points of maximum and minimum pressure. The arrow pointing toward the centre shows the mean direction of the wind.

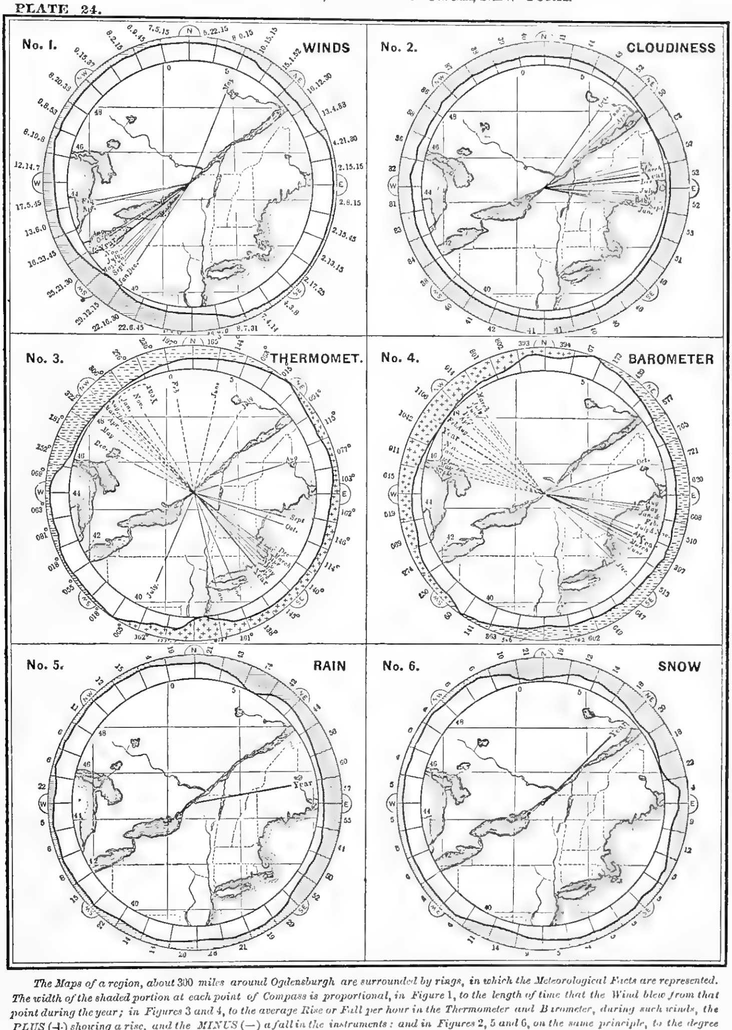
METEOROLOGICAL CHART,

SHOWING THE CONNECTION BETWEEN DIFFERENT METEOROLOGICAL PHENOMENA.

COMPILED AND DRAWN FROM OBSERVATIONS MADE DURING THE YEAR 1838,

BY JAMES H. COFFIN, AT OGDENSBURGH, NEW YORK.

PLATE 24.



The Maps of a region, about 300 miles around Ogdensburgh are surrounded by rings, in which the Meteorological Facts are represented. The width of the shaded portion at each point of Compass is proportional, in Figure 1, to the length of time that the Wind blew from that point during the year; in Figures 3 and 4, to the average Rise or Fall per hour in the Thermometer and Barometer, during such winds, the PLUS (+) showing a rise, and the MINUS (—) a fall in the instruments: and in Figures 2, 5 and 6, on the same principle, to the degree of Cloudiness, and to the average quantity of Rain or Snow falling per hour. The numbers in the margin require two decimal places in No. 2; three in No. 3; five in No. 4; and four in Nos. 5 and 6.

The CONTINUOUS lines diverging from Ogdensburg show the monthly maximum points of Wind, Temperature, Pressure and Cloudiness; and the DOTTED lines the minimum points. The heavy lines show the same for the year.

PLATE 25.

VELOCITY CHART.

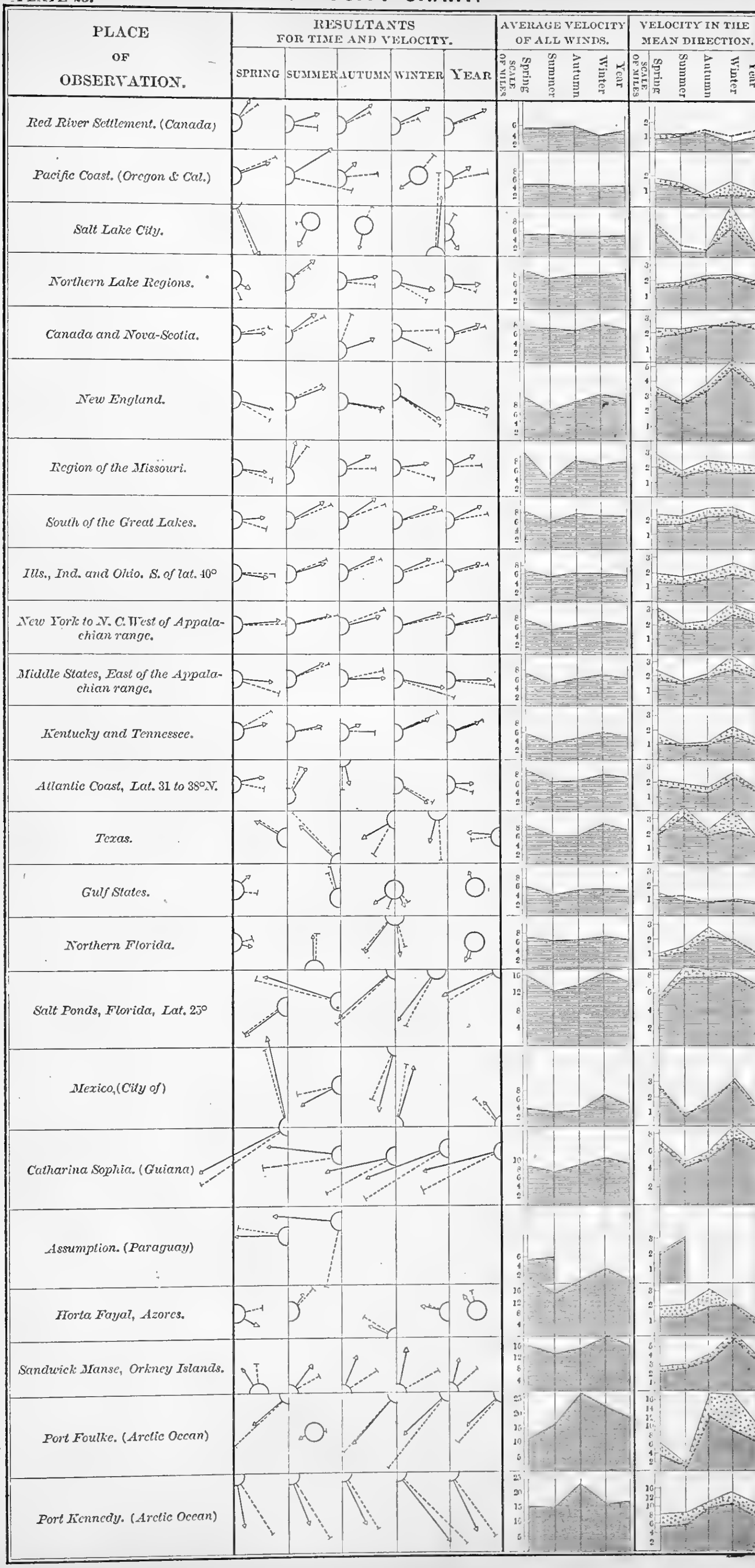
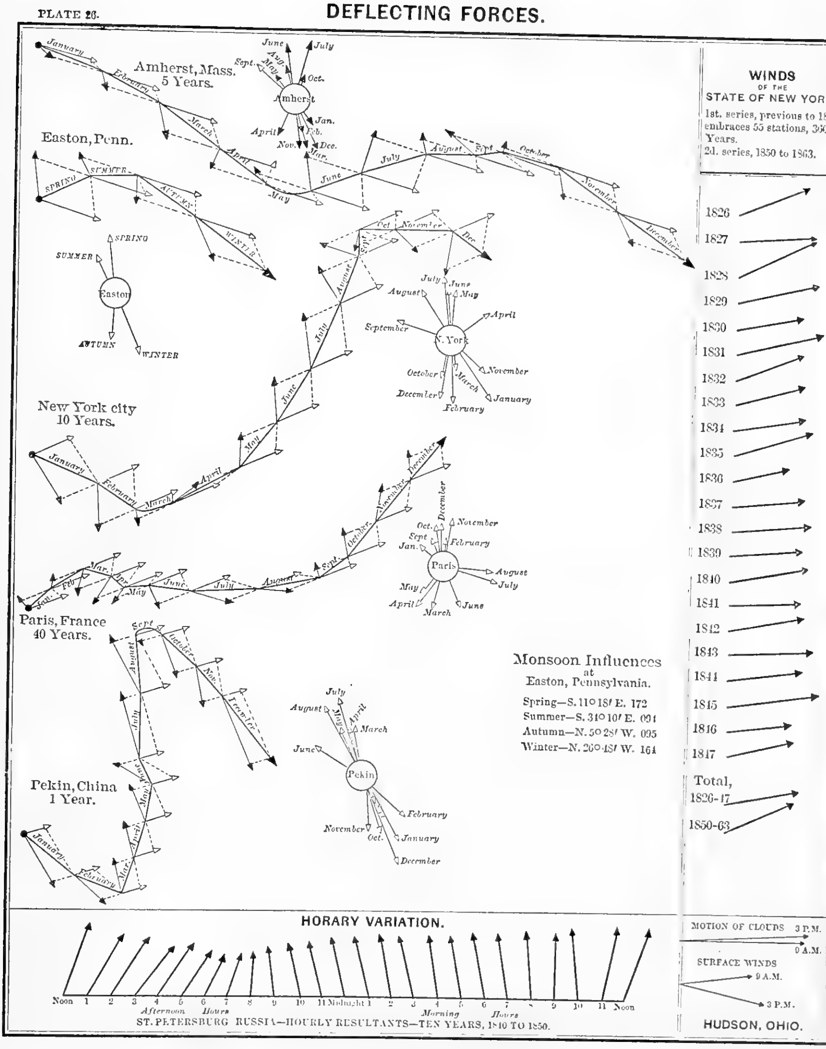


PLATE 26.

DEFLECTING FORCES.



SMITHSONIAN
INSTITUTION

CONTRIBUTIONS
TO
KNOWLEDGE

VOLUME XX

WASHINGTON